MODEL AIRPLANE NEWS

JUNE, 1939
20c

WE PLEASE *our* CUSTOMERS!

IT HAS ALWAYS BEEN THE POLICY OF THE "BURD" ORGANIZATION TO GIVE THE MODEL BUILDER WHATEVER HE ASKS FOR. THE RESPONSE TO OUR KORDA OFFER HAS BEEN SO OVERWHELMING THAT THE TENS OF THOUSANDS OF REQUESTS TO HAVE US CONTINUE OUR OFFER HAS INFLUENCED US TO PRESENT YOU WITH *Korda's* WORLD RECORD HOLDER AS A REGULAR STOCK ITEM *for*

DEALERS!

REAL PROFITS!

The model builders and ourselves thank you for your co-operative efforts in distributing this set at no profit. Now, however, we are making this a regular stock number at 39c list (still a good value at $1.00) and are giving prices to allow a long profit. Write or wire for prices today.

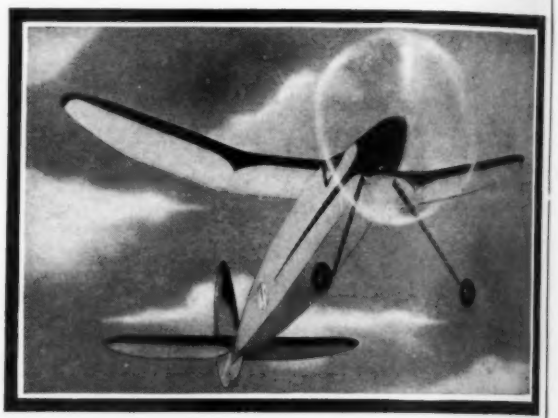
ONLY

COMPLETE IN ALL RESPECTS EXCEPT RUBBER.

39c

GET THESE AT YOUR DEALER'S!

If Bought Direct Add 25c Postage



WE GUARANTEE THIS MODEL TO BE EXACTLY THE SAME, IN ALL RESPECTS, AS THE MODEL SOLD AT $1.00 FOR MORE THAN A YEAR!

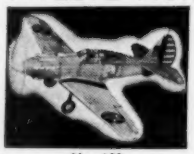
Up To 33" WINGSPANS Only 25c

A COMPLETE NEW LINE FEATURING "BURD" DESIGN!

TURNED COWLS • TRUE PITCH 'LAWRENCE' PROPELLERS • 4" TUBE CEMENT • MOVEABLE CONTROLS

Worth many times the price we ask. Absolutely complete in all respects. All guaranteed flying models prepared in "BURD'S" advanced designing department. Compare these values with anything being made. Compare for size, compare for design, features, contents—and see how they fly! Buy **"BURD"** and get the best!

TWELVE NUMBERS PREPARED IN THIS SERIES! IMMEDIATE DELIVERIES!



No. 100
Curtiss XP40

No. 101
Cub Seaplane

No. 102
Westland Co-op

No. 106
Douglas 038

No. 108
Monocoupe 90

No. 110
Boeing P26

DEALERS: Hop on the "Bandwagon." "Burd" dealers are "cashing in." The "Burd" line with over 100 fast selling types builds real profits for you. Get our proposition today.

SEND 5c FOR OUR LATEST CATALOG

THREE NEW 10c FLYING MODELS!

16" WINGSPAN

A selected variety of twenty-four models are now available in this series.

No. 31
Luscombe Phantom

No. 32
Monocoupe 110

No. 33
Rearwin Speedster

BURD MODEL AIRPLANE COMPANY

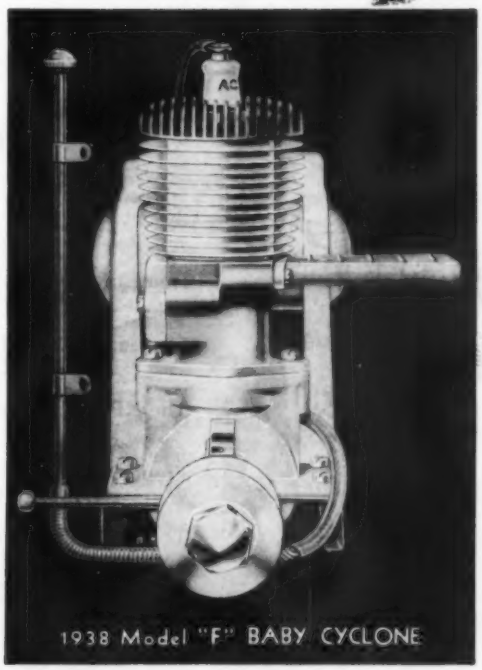
2113-2117 E. Oliver St., Balto., Md.

HEY—WAIT A MINUTE, BOYS!

Why pay more, when you can buy Baby Cyclone . . . a powerful, reliable and proven engine for only . . .

9 BUCKS

$9.00



1938 Model "F" BABY CYCLONE

The BEST and ONLY Engine We Build!

The full resources of Aircraft Industries have been concentrated on building one engine and building it RIGHT. The sentational low temporary price is not the result of cheapening the materials or construction of a more expensive model. You make this saving by buying direct from the factory, whose production methods and tremendous volume of sales permit us to offer you a high quality motor at the lowest price. Baby Cyclone is the world's greatest value!

Complete and assembled with coil, condenser, drawn steel engine mount, integral gas tank, remote control throttle, exhaust manifold and can of lubricating oil. Every Engine block tested and given full throttle run. Fully guaranteed against defective materials or workmanship. Postage prepaid in the U.S.A. Buy direct; we have no dealers in the U.S.A. Price in all foreign countries $18.00 for the duration of this offer.

CYCLONE SERVICE **Your engine positively will be shipped on same day your order is received.**

ORDER BLANK -- USE TODAY -- DON'T DELAY

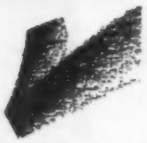
AIRCRAFT INDUSTRIES, GRAND CENTRAL AIR TERMINAL, GLENDALE (LOS ANGELES), CALIFORNIA

PLEASE SEND ME POSTPAID THE FOLLOWING ITEMS CHECKED. I ENCLOSE **POST OFFICE MONEY ORDER.**

○ **BABY CYCLONE MODEL "F" — Completely assembled as described above. REGULAR PRICE $12.50— TEMPORARY PRICE $9.00**

○ **BABY CYCLONE PROPELLER — Specially designed to operate with Baby Cyclone at peak efficiency. Tested and balanced. It is advisable to have two or three of these propellers on hand. REGULAR PRICE $1.50— TEMPORARY PRICE $1.00**

○ ***Extra Special*** Combination BABY CYCLONE Model "F" Propeller and "Chief" Kit. **Regular Price $19.00 TEMPORARY PRICE $12.50**



SHIP TO _____ Age ____ ADDRESS _____ N-6

BUY NOW -- BEFORE PRICE ADVANCES

Model AIRPLANE News

10th YEAR OF PUBLICATION

VOL. XX *No. 6*

Edited by Charles Hampson Grant

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Published Monthly by JAY PUBLISHING CORP., Mount Morris, Illinois.
Editorial and General Offices, 551 Fifth Avenue, New York City.
Jay P. Cleveland, President. N. Howard Williamson, Secretary.
Jay P. Cleveland, Advertising Manager, 551 Fifth Avenue, New York, N. Y.
Entered as second-class matter Dec. 6, 1934, at the post office at Mount Morris, Ill., under the act of March 3, 1879. Additional entry at New York, N. Y.
Copyright 1939 by JAY PUBLISHING CORP.
Price 20c a copy. Subscription price $1.65 a year in the United States and its possessions; also Cuba, Mexico and Panama.
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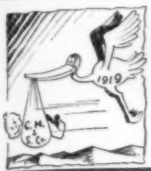
"CLEVELAND"

Today's Greatest Name in Models!

All year long, in celebration of our 20th Anniversary, we will be inaugurating new developments, pioneering new model building features, just as we have always done and for which we're now famous the world over—wherever *good* models are mentioned. Watch our ads—get our catalogs—if you're serious about model building, you can't afford to miss either.

CONTEST WINNING C-D CURTISS F11C-2



Without fear of contradiction, we feel, in all humility, we can say that Cleveland is the grand old company of the model industry having helped to build and raise its standards to where today it isn't looked down upon, but—up to by model building men everywhere. Cleveland the pioneer today is Cleveland the grand-daddy—old in years, yes—but dynamically young in ideas and new achievements.

No other hobby modelbuilding concern in America has a continuous record of 20 years in the industry, under the same management — and Cleveland principals are even more interested today than ever before in producing the kind of models they wanted themselves when their time was devoted solely to building models as a hobby, instead of manufacturing them. Why? Chiefly because they still "love" good models, more than for any other reason. 1939 is a Cleveland Year!

NEWEST LINE OF C-D RUBBER-DRIVEN MODELS!

KIT DESIGN NUMBER		SF 3¼" SCALE DRY KIT	SF 3¼" DE LUXE WET KIT	D 1½" SCALE DRY KIT
1	Gr. L. Sp. Trainer	$1.50	$2.00	$ .50
2	T. A. Mystery	1.75	2.50	.50
8	Boeing P12-E	1.50	2.10	.40
9	Sopwith SE-5			.40
13	Bishop's Nieuport			.50
15	Rickenbacker Spad			.50
16	Fokker D-7 Fighter			.60
17	Bayles' Gee-Bee			.50
18	Howard "Pete"			.25
19	Supermarine S6-B	1.75	2.25	.65
21	Hawk P6-E Fighter	2.25	3.00	.85
27	Doolittle's Gee-Bee	1.50	1.95	.50
28	Monocoupe Sport	1.50	1.95	.50
29	Boeing F B-3 Fight	1.50	1.95	.60
35	Boeing 247 T			1.95
42	Howard "Ike"	.95	1.25	.25
43	Douglas O-38.OBS	2.50	3.50	.85
45	Martin Bomber			1.95
46	Laird Solution Racer	1.50	2.00	.50
47	Wedell's W. Wms	1.75	2.50	.50
48	Turner's W. Wms	1.75	2.50	.50
49	Curtiss F11C-2	2.50	3.50	.85
51	D. H. Comet Racer			.95
52	"Mr. Mulligan"	1.75	2.50	.50
55	Douglas Transport			2.50
60	Boeing P26-A	2.25	3.00	.85
61	Seversky Fighter	2.25	3.00	.85
62	Custom Waco C6			.85
63	'36 Caudron Racer	1.50	2.00	.50
64	Beechcraft C-17-B			.85
65	Lockheed Electra			1.95
71	'37 Folkert Racer	1.50	2.00	.50
72	Turner Laird	1.75	2.50	.50

Dry kits of; D35, D45, D65 $1.95 ea. D55 $2.50
De Luxe Kits D-35, D-45, D-65 $2.75 ea. D-55 $3.25.

ROBERTS' MILLER SPECIAL Kit AU-1
4½"—Red, Nose Block, White Numerals

JIMMY SNYDER'S SPARKS SPECIAL Kit AU-2
4½"—Dark Blue with White Numerals

SHAW-OFFENHAUSER SPECIAL Kit AU-3
4½"—Cream, Red Trim

C-D RACE CAR KITS

While there are many hundreds of internationally known race cars, including 3 Indianapolis winners (No. 1, No. 2, No. 3) which anyone may select to model, we have taken these six as the first of a series we shall produce, but—will others duplicate these very same ones? Just watch for leadership in this field.

Kits are absolutely complete except for colors, which means they contain the following: body block, cut to size, authentic scale size (not top) wheels, axles, printed steering wheels, strips for bulges, exhausts, tierods, etc., and on top of this all, even glue. Order by number and name. Pack and Post Charge 15c per order. Each only....10c

OTHER RACE CAR KITS

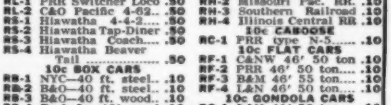
Austin (European) 4¼" Kit AU-4....10c
Alfa-Romeo (") 5" Kit AU-5....10c
Mercedes (") 5¾" Kit AU-6....10c

C-D GAGE RR MODELS GAINING IN POPULARITY

They're far more beautiful than you'd believe—wait 'til you see 'em!

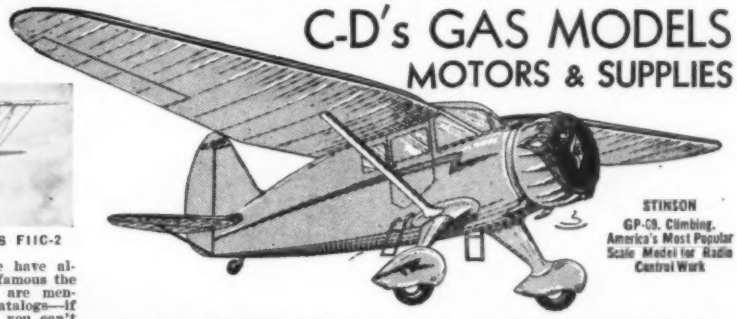
There are more C-D Gage systems under construction today than in any other gage. All kits are 3/16" scale for ¾" gage. Average over all sizes—Locomotives, 12"-17"; Passenger Cars, 15"; Box Cars, 8"; height 2½". Kits are complete with sides, tops and ends printed in authentic colors and lettering. By simply employing working couplers, and trucks, all "REP" (cars only) models may be used in your operating layout later. All kits are dry (no liquids).

RL-1	PRR Switcher Loco	.50	
RL-2	C&O Pacific 4-62	.50	
RS-1	Hiawatha 4-4-2	.50	
RS-2	Hiawatha Tap-Diner	.50	
RS-3	Hiawatha Coach	.50	
RS-4	Hiawatha Beaver Tail	.50	
	10c BOX CARS		
RB-1	NYC—40 ft. steel	.10	
RB-2	B&O—40 ft. steel	.10	
RB-3	B&O—40 ft. wood	.10	
RB-4	Rock Is. 40' wood	.10	
RB-5	Wabash—40' wood	.10	
RB-6	SP 40' wood furn.	.10	
RB-8	T&P 40' wood auto	.10	
RB-9	AT&SF 40' wood	.10	
RB-11	U.P.—50' steel	.10	
RB-12	AT&SF 50' auto	.10	
	10c HOPPER CARS		
RH-1	CCC&StL RR	.10	
RH-2	Missouri Pac. RR	.10	
RH-3	Southern Railroad	.10	
RH-4	Illinois Central RR	.10	
	10c CABOOSE		
RC-1	PRR type N-5	.10	
	10c FLAT CARS		
RF-1	C&NW 46' 50 ton	.10	
RF-2	PRR 46' 50 ton	.10	
RF-3	B&M 46' 55 ton	.10	
RF-4	L&N 46' 50 ton	.10	
	10c GONDOLA CARS		
RG-1	L&N 41' 50 ton	.10	
RG-2	NYC 41' 50 ton	.10	
RG-3	MC 41' 55 ton	.10	
RG-4	T&P 41' 55 ton	.10	
	10c 8000 GAL. TANK		
RT-1	Texaco—TCX (wh.)	.10	
RT-2	NATX (black)	.10	
RT-3	Sinclair—SDRY	.10	
RT-4	Gulf—CRCX (blk.)	.10	



Don't You Be Sorry Later That You Didn't Start This Gage Sooner.

C-D's GAS MODELS MOTORS & SUPPLIES



STINSON GP-09. Climbing. America's Most Popular Scale Model for Radio Control Work

C-D GAS MODEL KITS—THE BEST AVAILABLE!

GP 5004 Cloudster Dry Kit	$ 2.50
Wet Kit	4.25
Complete Kit	6.85
GP 69 Rearwin Dry Kit	4.85
Wet Kit	9.25
Complete Kit	11.90
GP 66 Stinson Dry Kit	8.50
Wet Kit	13.25
Complete Kit	15.95

NOTE: Dry kits contain full size drawing, covering tissue, printed wood, strip wood, music wire, celluloid, nose blocks, screws, etc. Wet kits have all cements, colored dopes and pneumatic wheels added.

Complete kits have everything the "Wet" and "Dry" kits have plus a timer, battery holder, booster plugs, jacks, hook up wire and a propeller to fit your motor. Select the motor you desire and add to the complete kit price and you will have everything you need for your gas model.

"REP" FLYING MODELS

R15	Fokker D-7	
R21	Curtiss Hawk	
R52	Mr. Mulligan	
R53	Grumman F2-F1	
R56	Consolidated All	
R57	Great Lakes Trainer	
R58	Ryan Sportster	
R59	Hawker Low Wing	
R66	Stinson Reliant	
R67	Fairy Battle	Ea. 50c
RX5001	Amphibion 20", Al Williams Grumman, Hughes Racer	Ea. 75c

NOTE: Include 15c packing charge on ALL ORDERS UNDER $5.00 except coils and wheels. Everything in stock for immediate shipment.

COMPLETE GAS MODEL KITS INCLUDING LIQUIDS (Except Power Unit)

6'-4" Howard D.G.A.-8	$12.50
6'-8¾" Fairchild Ranger "24"	9.95
45" Midget Hawk	3.95
6'-4" Luscombe Phantom	13.95
71½" Chester's (Jeep)	11.95
76" Monocoupe 90-A	12.50
72" Pages Navy Racer	9.85
79¼" New Taylor Cub	8.50
6' Silver Flyer	6.50

GAS MOTORS

All motors listed are ready to run, postfree, and include gas tank, coil and condenser.

Ohlsson "23"	$16.50
Ohlsson-Gold Seal	18.50
Brown Jr. Model D	12.50
Brown Jr. Model C	17.00
Brown Jr. Model B	21.50
Syncro "ACE"	13.75
Syncro "ACE" Special	9.95
Syncro "BEE"	12.50
Bunch Mighty Midget	9.50
Bunch Gwin Aero	12.00
Dennymite Special	14.50
Dennymite Standard	15.85
Dennymite De Luxe	17.85

PARTS—SUPPLIES

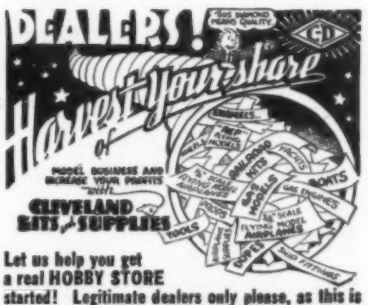
Cadet Starter	$ 3.00
Fire crack Coil, 2½ oz.	2.50
Big Shot Coil, 5½ oz.	3.50
1¾ oz. Coil (No Cond. needed)	3.00
Superlite Coil, 1⅝ oz.	1.95
Hot Ld. Wire (Clip Ends)	.15
Hook Up Wire, 5 ft.	.15
Brown Jr. Plug, ¾-24	.65
Champion Plugs, ¼-32 or ⅜-24 ea.	.65
Lightweight Condenser	.15
1 oz. Standard Timer	1.95
Austin Timer, ⅝ oz.	1.25
2 Cell Batt. Box P. & 1" size	.40
2 C. Batt. Box, Std. size	.50
Brown Jr. Ex. Manifold	1.00
Small Toggle Switch	.39
Small Knife Sw. SPST	.25
Midget Tip Jacks, ea.	.09
Tip Plugs, Solderless	.09
SAE-70 Oil, ½ Pt.	.35
Quality Propellers—Plain Wood 9-10-11-12-13-14 In. Dia., each	.50
Laminated Props, 12"	.98
2½ Volt Air Wheels	1.25
3½ Volt Air Wheels	1.50
4½ Volt Air Wheels	1.75
Varnished Pros, 9 or 10" .75; 11" .85; 12" .90; 13" .95	
Balsa Wood Wheels, bronze bushings, 3½ dia. x 1-5/16, pr.	.65
Wheel Shoe Blocks for 3½" wheels, set	.95
Silk, A-grade	.50 yd.
Silk AA grade	.80 yd.
Amer. Bamboo Tissue, white & colors, sheet	.10
Aluminum Angle ½ x ½ x 1/16, ft.	.15
Striping Tape 10 ft.	.15
Brass Collars with set screw—1/4-5/32-3/16-7/32 bore, pair	.05
Our complete catalog (10c) lists Wood Strips, Wire, Dope and thousands of other items for all types of model work.	

★ ★ ★ ★ ★ ★ ★ ★

2 SUPER-CATALOGS

No. 8 Hobby. New super catalog of C-D and HO RR equipment racing autos, airplanes, ships, etc. Also many hard-to-get supplies, parts, and miscellaneous items, including cameras, archery sets, microscopes, telescopes, etc., etc. Dozens of catalogs rolled into one—don't be without it. Send 10c right away for this great new C-D Hobby Catalog (No. 8). **10c**

No. 7 HO. Contains everything listed by Varney, Mantua, Gilbert, Knapp, Lockhart, Howard, and many others. Also items never before cataloged. Includes article on 2-Rail Operation, alone worth the price. If you're an H-O enthusiast, send 10c at once for this ALL H-O Catalog (No. 7). **Only 10c**



Let us help you get a real HOBBY STORE started! Legitimate dealers only please, as this is not information of interest to model builders.

CLEVELAND MODEL & SUPPLY CO., INC.

4508-C40 Lorain Avenue "SINCE 1919" Cleveland, Ohio, U. S. A.

WOULD YOU COME TO CURTISS-WRIGHT TECH IF WE GUARANTEED YOU A POSITION IMMEDIATELY UPON GRADUATION, with an opportunity to advance rapidly into supervisory positions with greater responsibilities and bigger pay?

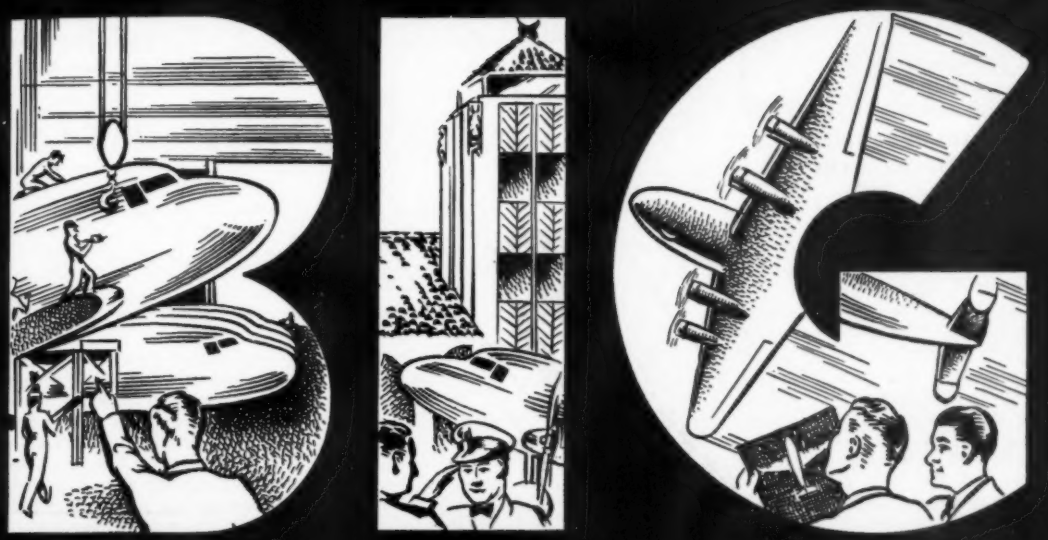
Naturally, we can't be expected to do this for obvious reasons—one of which is YOUR capabilities, of which we know nothing. We do not now, nor have we ever guaranteed or even promised positions to our graduates. BUT—after all, why should we?—it is entirely unnecessary as well as unethical. The record of Curtiss-Wright Tech graduates, over the years, is all the guidance or guarantee anyone needs who is ambitious. For years, practically all Curtiss-Wright Tech graduates have obtained immediate employment and have steadily forged ahead into the bigger jobs that are only open to those with proper training.

The newspapers are full of the proposed United States national defense aviation expansion program now just getting under way. Tremendous plans are being made for capacity production, WHICH MEANS TRAINED MEN WILL BE IN DEMAND AND AT A PREMIUM. Aviation is a highly specialized business and there is no chance for advancement for the untrained man. Opportunity is positively hammering at your door. There never was such a chance in aviation for you—there may never be another such chance.

"Don't put off until tomorrow what you can do today." Enroll now with Curtiss-Wright Tech before you "miss the boat."

CURTISS-WRIGHT TECH

trains You for the



JOBS IN AVIATION

We are not training our students to drive rivets all their lives. Curtiss-Wright Tech training is all designed to prepare its students to occupy responsible supervisory positions. Our hundreds of successful graduates prove that Curtiss-Wright Tech training gets results and always pays—it has provided them with a profitable occupation and a secure future career. Curtiss-Wright Tech's two major courses, AERONAUTICAL ENGINEERING and MASTER MECHANIC, are complete career courses and are carefully planned to train you in advance for the highest position you ever expect to occupy.

CURTISS TECHNICAL WRIGHT INSTITUTE

ESTABLISHED 1929 C. C. MOSELEY, PRES.

GRAND CENTRAL AIR TERMINAL • GLENDALE (LOS ANGELES), CALIFORNIA

Without cost or obligation send me full information and catalog on the course checked below

Major Career Courses
- ☐ AERONAUTICAL ENGINEERING
- ☐ MASTER AVIATION MECHANICS

Supplementary Courses
- ☐ POST GRADUATE ENGINEERING
- ☐ AIRCRAFT SHEET METAL

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- ☐ AERONAUTICAL DRAFTING
- ☐ BLUE PRINT READING

NAME_____ Age_____ Date I plan to Enroll_____

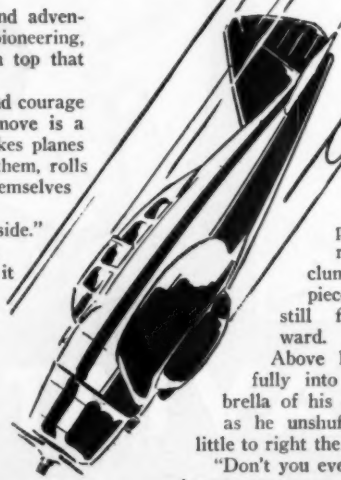
ADDRESS_____ City_____ State_____ N 6

Home of the Test Pilot

The Vital Story of Type Planes Are oped and

How the Latest Conceived, Devel- Tested for the U. S. Army Air Force

All photos by courtesy of the U. S. Army



Electric motors spin props for hours on this "Whirl Test" rig. Propellers up to 40 feet in diameter may be tested

WHEN it comes to thrills and adventure, combined with the spirit of pioneering, there's no job on earth that can top that of the TEST PILOT.

He must have nerves of steel and courage that is unflinching. His every move is a slap at the face of Death. He takes planes high above the earth and spins them, rolls them, dives them until they rip themselves apart under the terrific strain.

Then, for him it's "over-the-side."

He dives head first into space.

The whine of the ship as it plunges past him with no guiding hand at its controls rings in his ears.

He topples over and over, spinning dizzily through space.

"One . . . Two . . . Three . . ." up to ten he counts.

Then he yanks at the cord.

WHAM! SNAP! JERK!

His head snaps back. The straps tighten around his shoulders. There is no more speed. No more sensation of falling. He floats easily earthward.

Below he sees the plane he bailed out of a few seconds ago plunge with terrific force into a clump of trees. A piece of the wing is still fluttering earthward.

Above he gazes thankfully into the silken umbrella of his chute. He grins as he unshuffles the cords a little to right the chute in a pocket.

"Don't you ever fail me, baby," he murmurs as once again the cords become taut around his waist and shoulders.

A few minutes later his feet touch solid ground and he's home once more, ready to make his report on the performance the ship he has just tested.

In this case home is Wright Field in Dayton, Ohio—the testing grounds for Uncle Sam's "Eagles." Here the crack test pilots of the Army Air Corps test America's war-birds. They are the most expert pilots of the service, chosen because of their flying experience, reliability and efficiency.

They make thousands of test flights every year without accident or even incident. They fly in all kinds of weather, all types of planes. It is their job to see that Uncle Sam gets planes that are second to none in the world. The strength of the air corps is dependent upon their judgment.

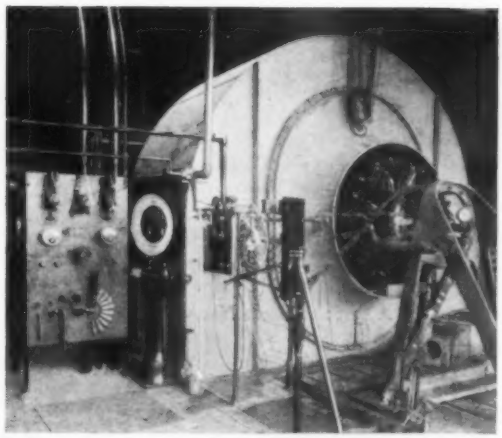
However, the actual flight testing of planes is only a minor part of the work carried on at Wright Field. There are numerous other tests and experiments which make up the routine at the army's great aeronautical experimental organization, and to a great degree the story of Wright Field —its history and operations—follows the story of aviation.

Some quarter of a century ago, Dayton saw the beginning of a new industry. The Wright Brothers, two of its native sons, started it as a side line in their bicycle repair shop. Today that industry has

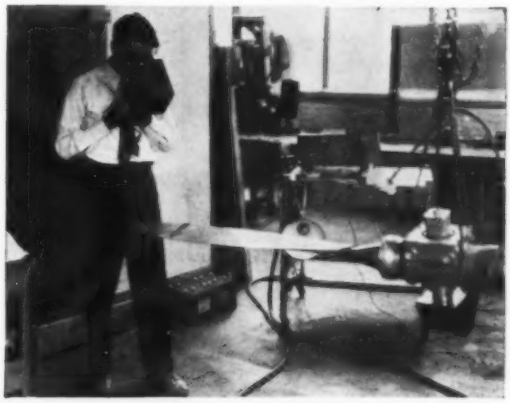
Home of the officers of Wright and Patterson Fields

Old McCook Field during the World War

Army crack test pilots seek shelter beneath a Seversky

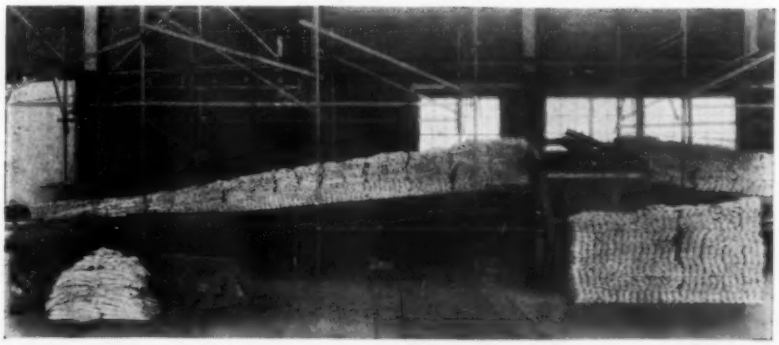


This machine blows sand and rain onto motors. They've got to take it, or else - - -



An engineer peers through an instrument to detect flaws in the blades of a prop

Bags loaded with lead are piled on wings in order to test their strength



By Douglas J. Ingells

grown to such proportions that it is regarded by all the civilized nations of the world as a major arm of national defense. It was hastened through its early stages by the World War and since then it has become the world's greatest advancement in transportation.

Briefly, this is the story of aviation. It was only natural therefore that Dayton should become the pivotal point of its growth.

A flying field for experimental purposes was established by the army at McCook Field, Dayton, close to the end of the World War. It was named McCook Field in memory of General Anson McCook and his seven sons, the "Fighting McCooks" of Civil War fame.

Here at the new field an energetic program of aviation research and experimentation was carried out by the air corps. The temporary war-time buildings at McCook Field soon became inadequate, however, and it was necessary to seek a new and larger location to continue the experiments.

The citizens of Dayton, wishing to establish some fitting and permanent memorial in honor of the Wright Brothers, purchased a large tract of land and presented it to the government to be used for the

(Continued on page 34)

Patterson Field, a supply and repair depot

Here's Uncle Sam's aeronautical experimental lab

Elements of Model Plane Radio Control

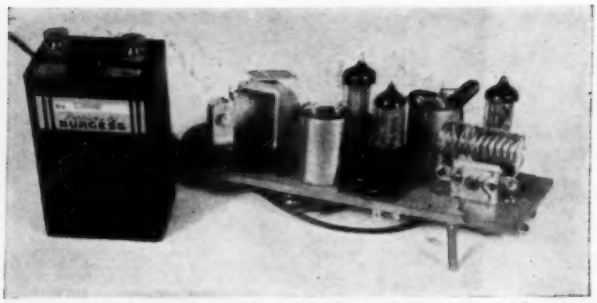


Figure 2. A three tube receiver weighing about 8 oz. with relay. The battery is the new 5-1/2 oz. Burgess V30BP 45 V. battery

Suggestions on Radio Control Equipment That Will Enable You to Make Your Radio Control Sets More Efficient and Practical

PART 2

By
HOWARD McENTEE

THIS second article on model airplane radio control will furnish details of further equipment that may be built and used by the average constructor. It should be emphasized that the idea behind this series is not necessarily to enable the constructor to make exact copies of the equipment shown, but to adapt it to his own needs. A subject as highly individual and experimental as model plane radio control makes it practically a certainty that each constructor or each group of constructors will have a "pet" idea that is thought to be better than all others. This is as it should be, for it is only in this way that the science will advance. However certain basic types of equipment are indicated, and it is hoped that these articles will furnish the needed "dope" on such equipment.

With this thought in mind, a transmitter for use with battery power will now be described. This unit is of the dual-channel type; that is, there are two separate transmitting frequencies, either or both of which may be used as required. And either singly or together. The rig has been made as flexible as possible so as to cover all types of control work. Thus an audio frequency modulator tube has been incorporated for the more advanced experimenter who wishes to work with audio frequency tone control. The modulator tube is made to produce its own A.F. oscillation by a simple feedback connection. Only one frequency is provided for in the diagram shown, but a

(Continued on page 65)

Figure 5. R.F. equipment is on the upper deck; audio oscillator and power supply on lower.

Figure 4. Dual channel transmitter, battery cable at lower left.

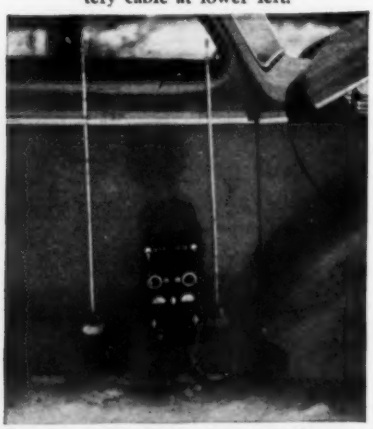


Figure 6. The transmitter ready for use. The antennas shown must, of course, be set out away from the car body and from each other.

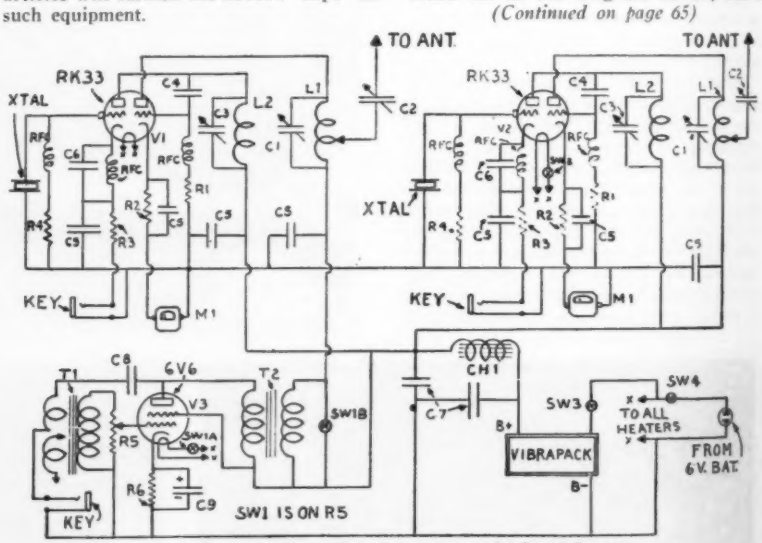


Figure 1. Parts list appears at end of article

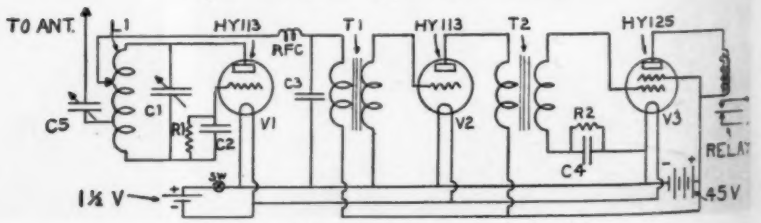


Figure 3. Parts list appears at end of article

The completed model is a fine flyer in spite of its small size

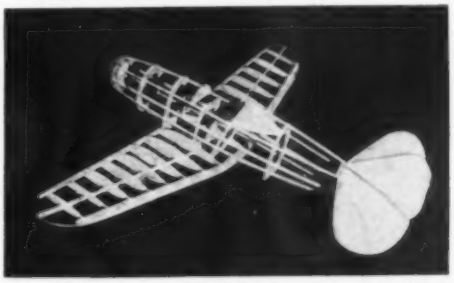
It has graceful lines and realistic appearance

The XP-40 Takes To The Air

A Realistic Scale Model of a High Speed Curtiss Pursuit Plane Designed in Careful Detail That Will Fly For 25 Seconds

By HERBERT K. WEISS

The battery indicates the relative size of the plane. Note the strong construction of the frame.



The plane is easy to build yet has many realistic details.

FOR several months we've been planning to work up a model for this series that would have considerably more detail than the simpler layout of the past. We were willing to sacrifice a little performance in the interests of, say, closer wing spacing and a couple of coats of dope. To offset the increased weight, we wanted a very clean ship with low frontal area; this, of course, eliminating the radial engined prototypes. Our ideal was a mid-wing ship with liquid cooled engine, slim fuselage and reasonable tail area. But somehow we couldn't find quite the plane.

We'd pretty nearly given up the United States and were all set to have another look at Jane's "All the World's Aircraft," when we picked up a newspaper . . . and there was a picture of the XP-40. She was low-winged rather than mid-winged, but otherwise she was just what we wanted, and after a good deal of scurrying after data we were able to lay her out on the drafting board and begin building the model.

We might say something here about the original large plane. Several years ago, the Curtiss company was developing its model "77" low-wing fighter. Pictures that slipped out of the plant occasionally showed a great deal of experimentation going on to determine the effects of many design changes.

In full flight, climbing for altitude

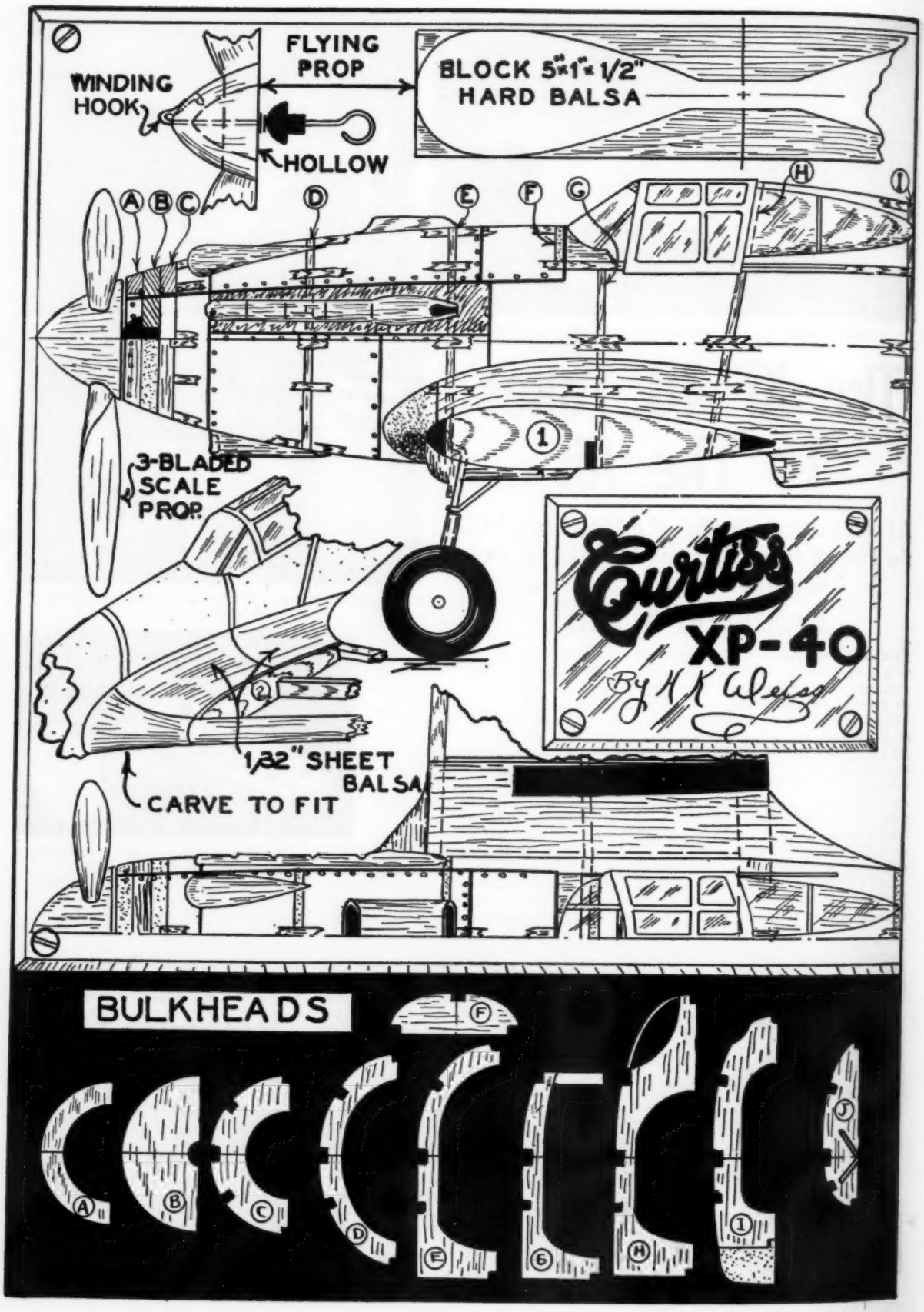
Every engineer knows the value of trying every design combination in hopes that there may be one which will be outstanding from the rest, but very few have the patience to apply this principle to the small features of a project; such as windshield contours, vent locations, landing gear fairings and the multitude of possible variations of detail design.

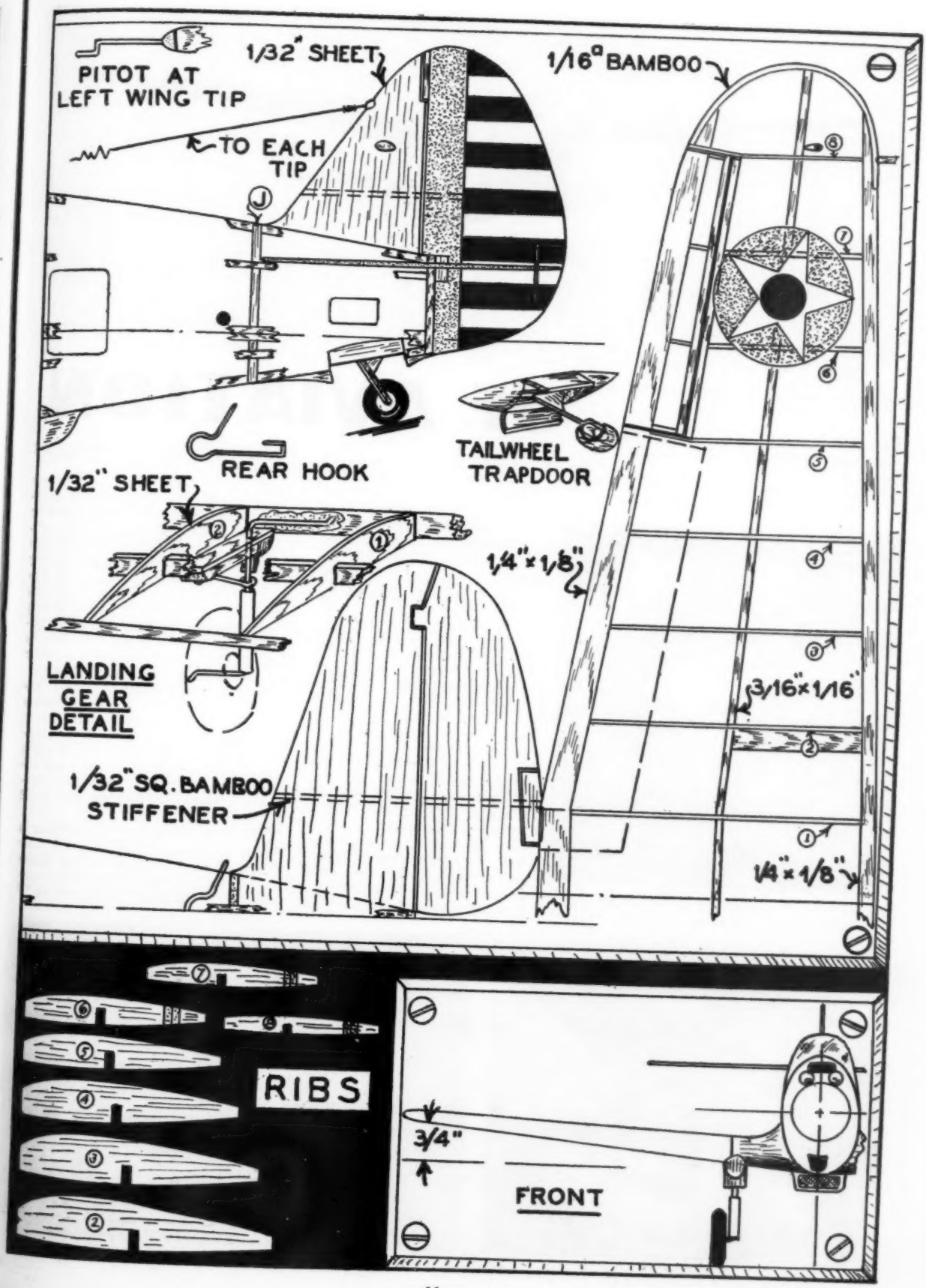
Model builders who have followed the old Hawk biplane series are well acquainted with the thoroughness with which Curtiss engineers investigate the possibilities of design changes. Hawks were built with straight wings, tapered wings, wing radiators, fuselage radiators; with inverted, radial and V-engines; with air-cooled, water-cooled and liquid-cooled engines. Landing gears with split axles, single struts, pants, spats, unfaired struts, faired struts and fully retractable gears were built. The same principle of trying everything was advanced to the "77" monoplane. And so when the ship finally emerged successfully from U.S. Army tests, it became the already famous Hawk P-36, which needs no introduction to any model builder.

But the engineers were still not satisfied. In collaboration with the Army Air Corps specialists at Wright Field they produced a P-36 with co-axial props, the P-37 with Allison engine and finally the XP-40, which flies over 390 m.p.h., and can climb almost a mile a minute.

Those of you who are interested in the constructional details of the XP-40 will find them in the February issue of MODEL AIRPLANE NEWS. And we'd like to point out that Curtiss already had a good ship in the P-36; but they tried again and pro-

(Continued on page 50)

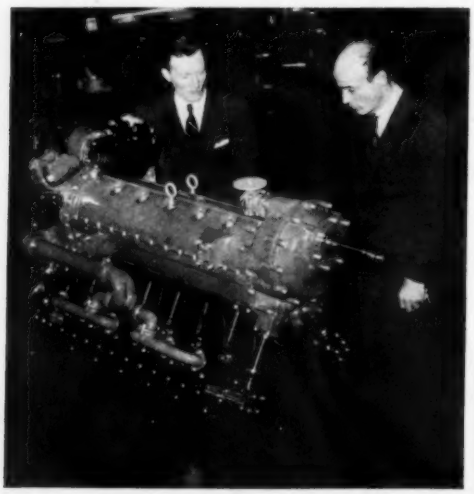

FLYING PROP
WINDING HOOK
HOLLOW
BLOCK 5"×1"×1/2" HARD BALSA
A B C D E F G H I
3-BLADED SCALE PROP.
1/32" SHEET BALSA
CARVE TO FIT
Curtiss XP-40
By H K Weiss
BULKHEADS
A B C D E F G H I J


PITOT AT LEFT WING TIP
1/32" SHEET
1/16" BAMBOO
TO EACH TIP
REAR HOOK
TAILWHEEL TRAPDOOR
1/32" SHEET
1/4" x 1/8"
LANDING GEAR DETAIL
3/16" x 1/16"
1/32" SQ. BAMBOO STIFFENER
1/4" x 1/8"
RIBS
3/4"
FRONT

FRONTIERS OF AVIATION

The Boeing trans-Pacific Clipper on its first flight to the Orient

THE BIG news this month is more of a military nature! However before we delve into the design of new fighting planes we will run through some brief details of new commercial creations. Among them is Stinson's little sport job which rates headlines, the Model 105. It is the finest lightplane we have seen yet. Powered by a new 75 h.p. Lycoming engine, it is a high-wing monoplane carrying three people. In comparison to the Piper Coupe it is slightly larger, being one step up in class. It carries a straight wing with the usual V-strut bracing, but its novel feature is the use of Handley Page slots! Trailing edge flaps are incorporated and with these and the slots in the leading edge the wing loading is probably higher than that found on the usual lightplane today. This accounts for the airplane's economical performance of 25 miles to the gallon. Hydraulic brakes is another important feature.



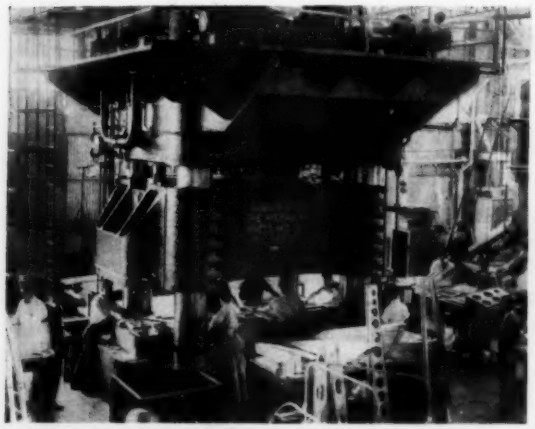
The new 500 h.p. twelve cylinder Ranger engine, lightest of its type in the world. (Acme)

The interior is very clean-cut with a modernistic touch. A very attractive stainless steel instrument panel with dual wheel controls extending from it is installed. The cabin has a fine wood finish with individual seats for the pilot and co-pilot forward with a small seat in the rear for an additional passenger.

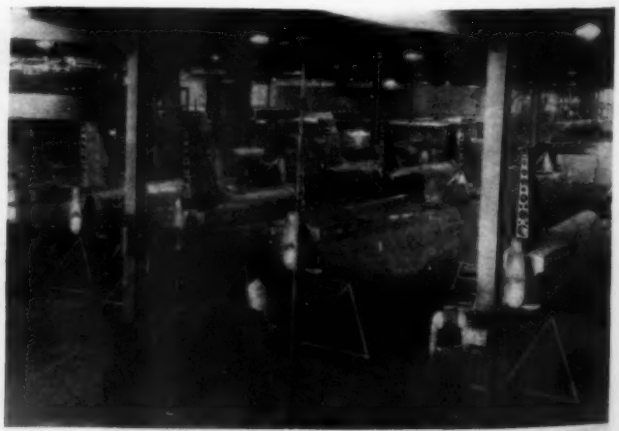
Out on the West Coast another new sportplane has come into being—the Hockaday Comet. It is also a small high-wing monoplane and carries two-passengers side-by-side with a new 100 hp. Monsoon engine in the nose. The span is 33 feet with a wing loading of 9.3 pounds per square foot. Top speed is claimed to be 135 m.p.h. with cruising speed at 120 m.p.h. The airplane is a development of former Hockaday airplanes of which only a few were built. As this was written preparations were under way for the airplane's first test flight.

The only radical departure from the conventional is the use of a French Monsoon engine which has received some publicity in the past in this country. It is a four-cylinder inverted in-line air-cooled engine with a displacement of 243 cubic inch displacement. It weighs 205 pounds or approximately 2 lb./hp. Fuel consumption is .42 lb./b.hp./hr.

Mr. H. W. Yarick was chief engineer in charge of the design of the Hockaday Comet. He also did some work on Timm's entry in the past army training plane competition. Incidentally, Timm, out of 17



This huge press makes 37,500 parts per day. (Interntl.)



Navy planes in production at Douglas'. (Interntl.)

The Moraine 405, one of the latest French fighters, submitted to the government for tests. (Keystone)

BY

ROBERT C. MORRISON

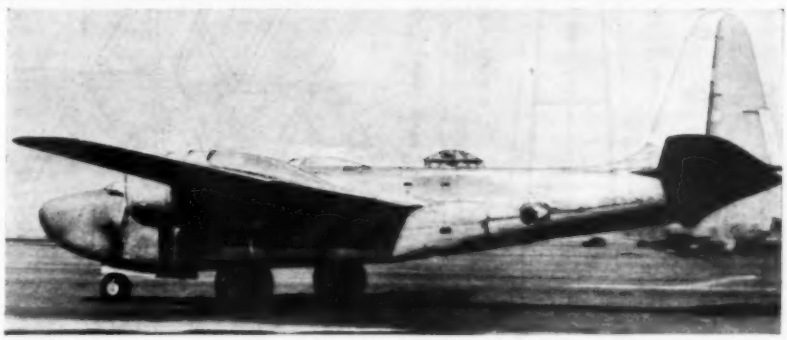
competitors, was one of four to be victorious; the others being Ryan, Fairchild and Fleet. Timm's entry was a revamped Kinner low-wing monoplane, design of which the company has purchased. The planes ordered will be used in the government's pilot training program.

Allied Aircraft Corporation has advertised their new sportplane which may be had as an open or closed job. Mr. Heindell, instigator of the Argonaut light amphibian, is head of the company. The airplane is another two-place, Menasco powered, low-wing monoplane, but the demand appears to be slim for that type of plane at this time.

Other notes are that Monocoupe will endeavor to launch its twin-engined Monocoach into the market once more—and this time with a twin-ruddered tail. Waldo Waterman has produced another Arrowbile. The wing is said not to be detachable in order that an Approved Type Certificate may be obtained for the airplane. Otherwise the Waterman product has the same general appearance as the former tailless ships.

Eastern Air Lines has just purchased a newly designed autogyro from the Kellett Company for use in transporting mail from the roof of the Philadelphia Post Office to Camden, N.J., Airport. The 'gyro is of the single-place type with the pilot sitting in a small enclosure with mail compartment up forward. Its three rotor blades may be folded back for hangar storage. The rotor

(Continued on page 46)



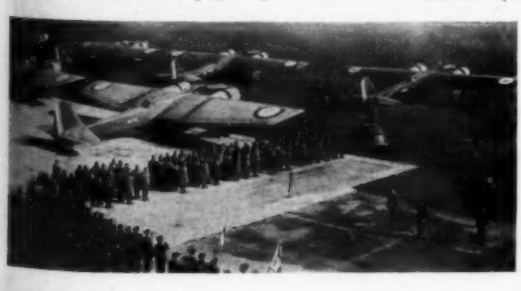
Above: the Northrop attack bomber that crashed while, on a secret flight with a French officer, killing the test pilot, John Cable. (International)

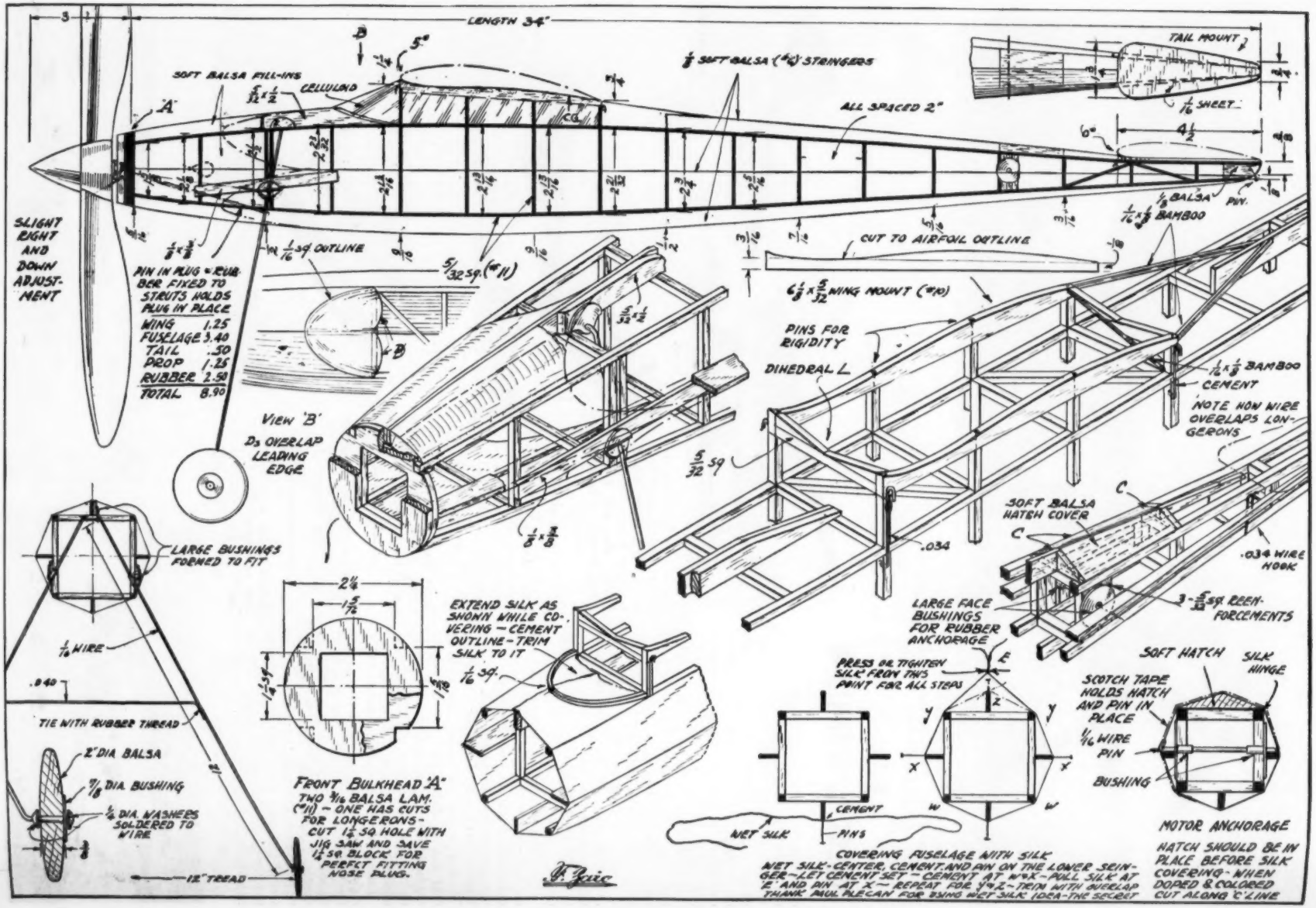
Left: Britain's newest warplane; the Boulton and Paul "Defiant," two-seat fighter. (Interntl.)

Left: the navy's new observation plane going through rough-water tests. (Acme)

Below left: a French bombing squadron ready to take off for Africa. (Internatl.)

Below right: a squadron of fast modern Potez "63" bombers, just accepted for service. (Keystone)




LENGTH 34"
TAIL MOUNT
SOFT BALSA FILL-INS
CELLULOID
1/8 SOFT BALSA (4) STRINGERS
ALL SPACED 2"
1/16 SHEET
4 1/2
SLIGHT RIGHT AND DOWN ADJUSTMENT
PIN IN PLUG + RUBBER FIXED TO STRUTS HOLDS PLUG IN PLACE
WING 1.25
FUSELAGE 3.40
TAIL .50
PROP 1.25
RUBBER 2.50
TOTAL 8.90
1/16 sq OUTLINE
5/32 sq. (#11)
1/8 BALSA
1/16 x 1/8 BAMBOO
PIN.
CUT TO AIRFOIL OUTLINE
6 1/8 x 5/32 WING MOUNT (#10)
PINS FOR RIGIDITY
DIHEDRAL L
1/16 x 1/8 BAMBOO
CEMENT
NOTE NON WIRE OVERLAPS LONGERONS
VIEW 'B'
D3 OVERLAP LEADING EDGE
5/32 sq
1/8 x 1/8
.034
SOFT BALSA HATCH COVER
.034 WIRE HOOK
3 - 5/32 sq REINFORCEMENTS
LARGE BUSHINGS FORMED TO FIT
1/16 WIRE
.040
TIE WITH RUBBER THREAD
2" DIA BALSA
7/8 DIA BUSHING
1/4 DIA WASHERS SOLDERED TO WIRE
12" TREAD
2 1/4
1 5/16
1/16 sq
EXTEND SILK AS SHOWN WHILE COVERING - CEMENT OUTLINE - TRIM SILK TO IT
FRONT BULKHEAD 'A'
TWO 1/16 BALSA LAM. (#11) - ONE HAS CUTS FOR LONGERONS - CUT 1/2 SQ HOLE WITH JIG SAW AND SAVE 1/2 SQ BLOCK FOR PERFCT FITTING NOSE PLUG.
LARGE FACE BUSHINGS FOR RUBBER ANCHORAGE
PRESS OR TIGHTEN SILK FROM THIS POINT FOR ALL STEPS
SOFT HATCH
SILK HINGE
SCOTCH TAPE HOLDS HATCH AND PIN IN PLACE
1/16 WIRE PIN
BUSHING
MOTOR ANCHORAGE
HATCH SHOULD BE IN PLACE BEFORE SILK COVERING - WHEN DOPED & COLORED CUT ALONG 'C' LINE
CEMENT
WET SILK
PINS
COVERING FUSELAGE WITH SILK
WET SILK - CENTER, CEMENT AND PIN ON THE LOWER SKINGER - LET CEMENT SET - CEMENT AT W & X - PULL SILK AT E AND PIN AT X - REPEAT FOR Y & Z - TRIM WITH OVERLAP
THANK PAUL PLECAN FOR USING WET SILK IDEA - THE SECRET

The Stout Outdoor Record Holder

How This Remarkable Plane Made Its Record Flight—Plans With Complete Details of How You Can Build It

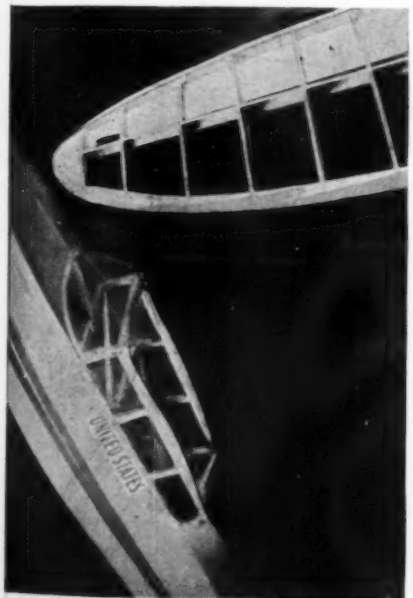
By FRANK ZAIC

Off to a flying start

"IT IS about time!" was all I could say when the New Yorker IV caught a thermal over Wayne County Airport during the 1938 Nationals. It had been a long time since one of my ships got sucked up into the clouds. Of course there was considerable luck attached to it as it is with most thermal flights. However, the flight was predetermined after a fashion and a great deal of credit belongs to Dick Everett.

I'll never forget the way he timed our walk with the timer from the check-in table to the take-off runway. He was constantly watching two billowy clouds which were drifting over the field. At the same time he kept an eye on the models taking off. As soon as he saw one of them caught by the first thermal he hurried us into preparation and it was a matter of minutes before the New Yorker IV was spiralling upward. The thirty-four inch pitch prop under the stress of tightly wound eighteen strands of 1/4 pulled the ship quite high. Over a minute passed before we noticed that the model managed to keep its altitude, and then it began a slow upward spiral. The model which showed us the initial thermal was already a speck under the cloud.

The twin rudders and large stabilizer provide great stability and soaring capacity



Here you see how the wing is constructed and details of the cabin construction

Well, it seems that we caught the fringe of the passing thermal. The model first drifted at right angle to the ground breeze; very likely due to the circulation of the thermal. Getting ready to follow it, we noted that the drift was now in the opposite direction, and that the second cloud was coming up. Could it be possible that the circulation of the second thermal was doing this lucky thing? At any rate, minutes ticked off and it looked worthwhile losing the model. But "Luck" stayed on. Instead of being drawn into the center of the coming cloud, the model persisted in staying in the fringe so that when the cloud passed by the model began its long spiral glide which landed it inside the field after 17 minutes 6.2 seconds of mixed emotions. Might mention that the other model was lost into the cloud with official time of less than ten minutes. Such is Fate!

The Design

The general design follows a definite predetermined theory. A high pitch prop was used to get every bit of possible altitude. Eighteen strands of ¼" flat rubber in determined hands has quite a kick in it and it could handle well the 34 inch pitch on 17 inches diameter. Of course the torque is greater than on smaller pitches, but the generous and poly-shaped dihedral of the wing was adequate for its control. The wing was set at a comparatively high angle of incidence of five degrees to keep the fuselage close to being parallel with the airstream, as well as to obtain higher lift. The airfoil was specifically designed to present a good entry at angles between six and twelve degrees. Twin rudders were used to give the stabilizer a better lift efficiency. The initial rudders were too small and at the contest tabs had to be added. The fuselage was designed to have the minimum of material on the stressed members; hence, the square type of basic structure with stringers and cabin to provide the needed cross section area. All these considerations proved of value in the final accounting.

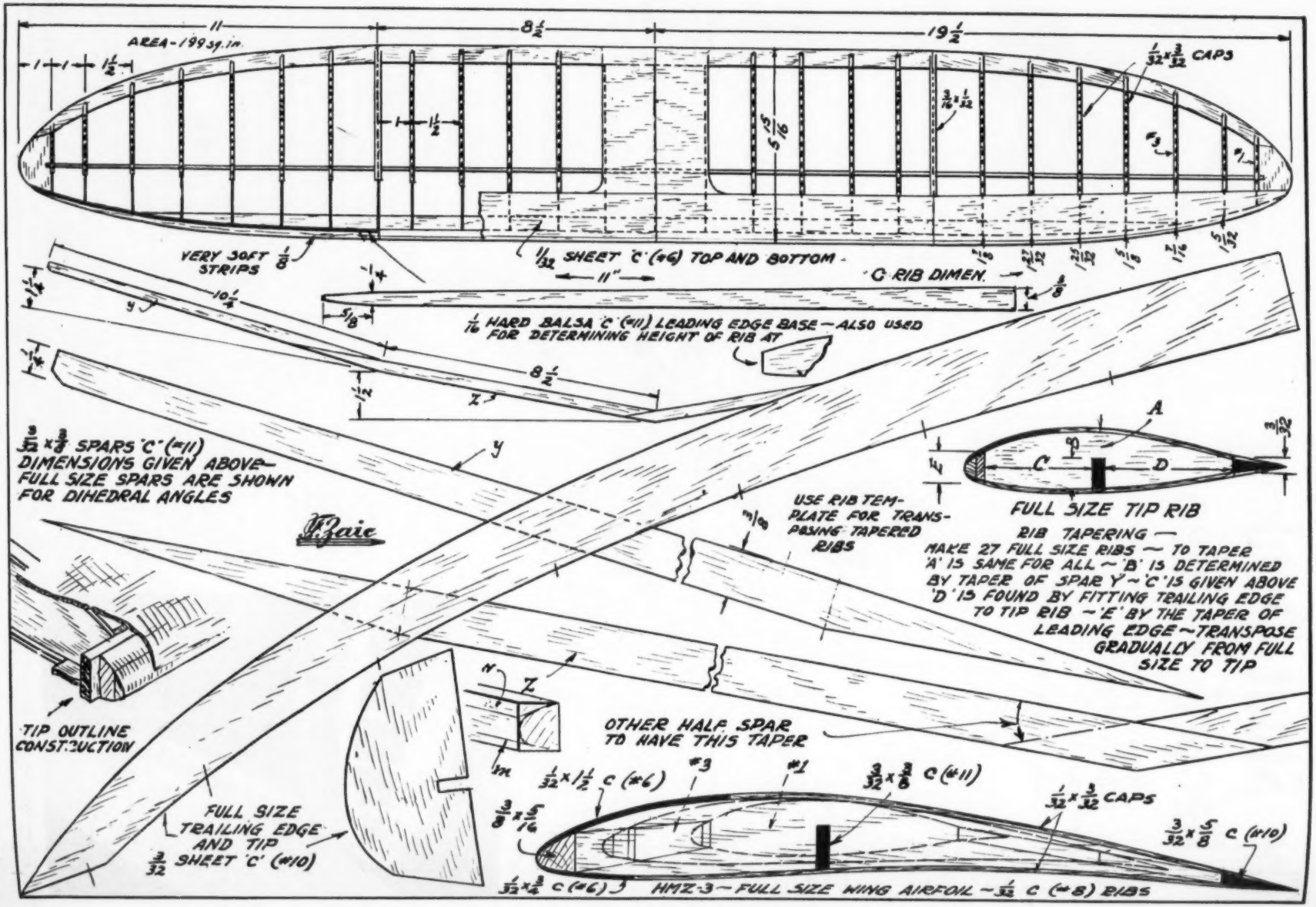
The Construction

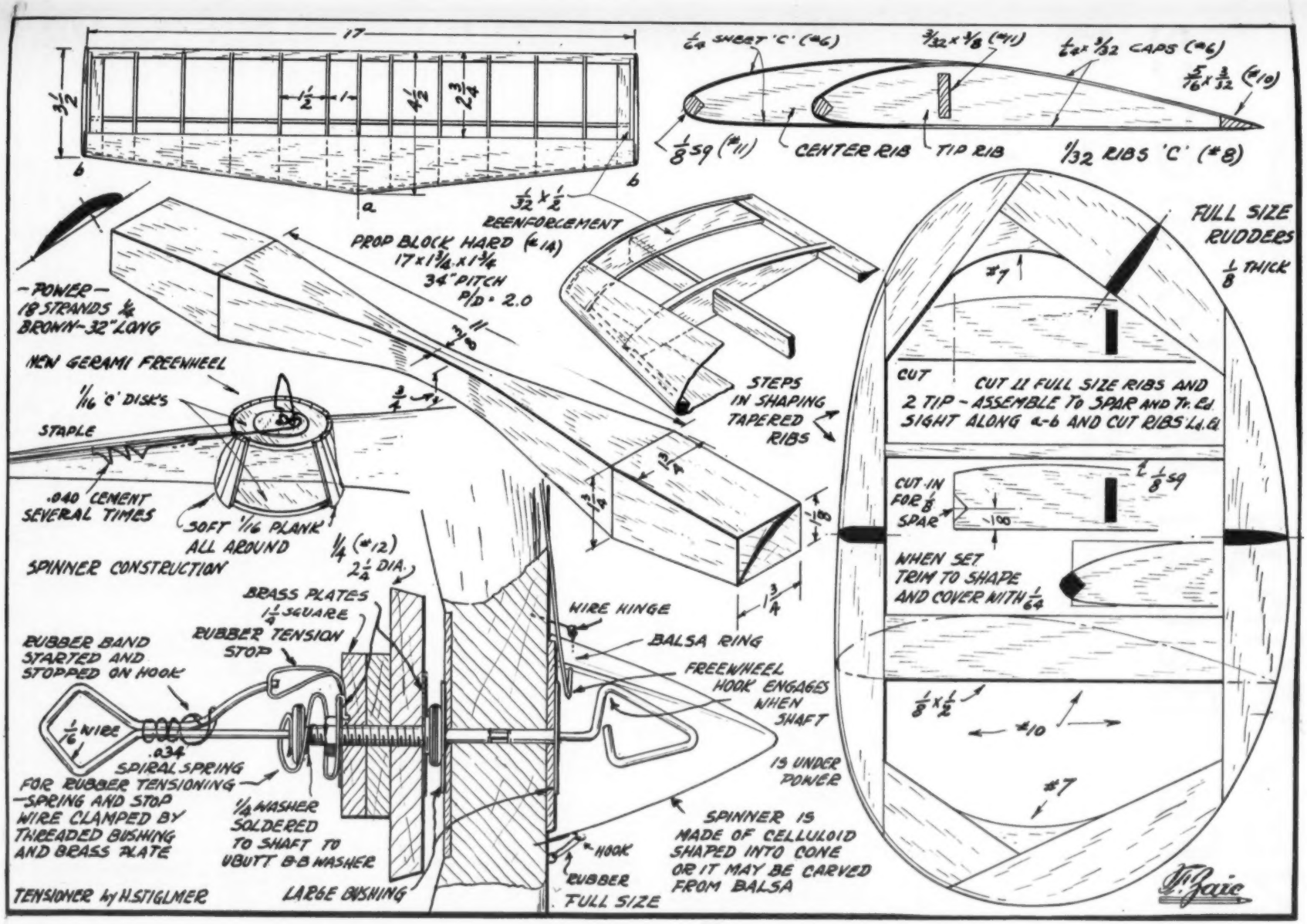
Before any attempt is made to duplicate the model, be sure that you have a good idea of every part. Drawings were prepared to show up the doubtful points. To some of you the construction might seem complicated, but if you just follow the suggestions and stick to the job you will be wiser in many construction points. The (#) marks indicate the poundage of balsa used. Color coded balsa was used for just this purpose. "C" indicates that quarter grain was used.

Fuselage

The fuselage is composed of square cross section basic structure, and is a straightforward job. The only deviation from the square is the tail portion which supports the stabilizer to zero degree incidence. It was found that the best method for cementing the two sides into a square is to first cement the bulkhead "A" and the sides at the tail end. The cross braces can then be positioned with assurance

(Continued on page 42)


AREA - 199 sq. in.
11
8½
19½
1
1
1½
1½
1⅝
5/16
3/16 x 1/32
1/32 x 3/32 CAPS
#3
#1
VERY SOFT ⅛ STRIPS
1/32 SHEET 'C' (#6) TOP AND BOTTOM
11"
C RIB DIMEN.
⅛
1/16 HARD BALSA 'C' (#11) LEADING EDGE BASE — ALSO USED FOR DETERMINING HEIGHT OF RIB AT
10½
8½
3/32 x 3/8 SPARS 'C' (#11)
DIMENSIONS GIVEN ABOVE
FULL SIZE SPARS ARE SHOWN
FOR DIHEDRAL ANGLES
USE RIB TEMPLATE FOR TRANSPOSING TAPERED RIBS
A
B
C
D
3/32
FULL SIZE TIP RIB
RIB TAPERING —
MAKE 27 FULL SIZE RIBS — TO TAPER
'A' IS SAME FOR ALL — 'B' IS DETERMINED
BY TAPER OF SPAR 'Y' — 'C' IS GIVEN ABOVE
'D' IS FOUND BY FITTING TRAILING EDGE
TO TIP RIB — 'E' BY THE TAPER OF
LEADING EDGE — TRANSPOSE
GRADUALLY FROM FULL
SIZE TO TIP
TIP OUTLINE CONSTRUCTION
OTHER HALF SPAR
TO HAVE THIS TAPER
FULL SIZE
TRAILING EDGE
AND TIP
3/32 SHEET 'C' (#10)
1/32 x 1½ C (#6)
3/32 x 3/8 C (#11)
1/32 x 3/32 CAPS
3/32 x 5/8 C (#10)
3/8 x 5/16
1/32 x 3/4 C (#6)
HMZ-3 — FULL SIZE WING AIRFOIL — 1/32 C (#8) RIBS


17
3½
1½
1
4½
2¾
a
b
1/32 X ½ REENFORCEMENT
1/20 SHEET 'C' (#6)
3/32 X 3/8 (#11)
1/20 X 3/32 CAPS (#6)
5/16 X 3/32 (#10)
1/8 SQ (#11)
CENTER RIB
TIP RIB
1/32 RIBS 'C' (#8)
PROP BLOCK HARD (#14)
17 x 1¾ x 1¾
34" PITCH
P/D = 2.0
-POWER-
18 STRANDS ¼
BROWN-32" LONG
NEW GERAMI FREEWHEEL
1/16 'C' DISKS
STAPLE
.040 CEMENT
SEVERAL TIMES
SOFT 1/16 PLANK
ALL AROUND
SPINNER CONSTRUCTION
¼ (#12)
2¼ DIA.
STEPS
IN SHAPING
TAPERED
RIBS
FULL SIZE
RUDDERS
1/8 THICK
#7
CUT
CUT 11 FULL SIZE RIBS AND
2 TIP - ASSEMBLE TO SPAR AND Tr. Ed.
SIGHT ALONG a-b AND CUT RIBS Ld. Ed.
CUT IN
FOR 1/8 SQ
SPAR
.100
WHEN SET
TRIM TO SHAPE
AND COVER WITH 1/64
BRASS PLATES
1¼ SQUARE
RUBBER TENSION
STOP
RUBBER BAND
STARTED AND
STOPPED ON HOOK
1/16 WIRE
.034
SPIRAL SPRING
FOR RUBBER TENSIONING
-SPRING AND STOP
WIRE CLAMPED BY
THREADED BUSHING
AND BRASS PLATE
¼ WASHER
SOLDERED
TO SHAFT TO
ABUTT B-B WASHER
LARGE BUSHING
TENSIONER by H.STIGLMER
WIRE HINGE
BALSA RING
FREEWHEEL
HOOK ENGAGES
WHEN
SHAFT
IS UNDER
POWER
SPINNER IS
MADE OF CELLULOID
SHAPED INTO CONE
OR IT MAY BE CARVED
FROM BALSA
HOOK
RUBBER
FULL SIZE
1/8 X ½
#10
#7

New Wings For Better Performance

Article No. 85-A

Flying Characteristics of Some New Gas and Rubber Model Airfoil Sections and How to Select the Right One for Your Plane

By CHARLES HAMPSON GRANT

THE FLYING qualities of a model depend, to a large extent, upon the wing cross section used. When a model is to be designed and a wing section is to be chosen for it, several factors should be considered.

First, is it to be a heavy model; a gas model weighing several pounds? Or is it to be a rubber powered plane which is comparatively light? It even might be a plane which is of medium weight, such as a small light gas model that would be powered by a motor of not more than 0.2 cubic inches of piston displacement.

In other words the weight of a model has a bearing upon the wing section that should be used. The heavier the model is, the "thicker" the section should be in order that deep strong wing spars may be used which can support the load without breaking.

Second, do you wish the model to fly as slowly as possible, do you wish it to be a very fast flier, or one of medium speed? In many cases models have such a high wing loading that a very high lift section must be used in order to prevent excessively high flying speed. Of course if it has a light wing loading and a slow speed section is used on it, the plane will fly so slowly that the rate of climb will be low. This is not desirable when the object is to attain high altitude in a short space of time. Usually a section should be used that will give moderate speed, when a high rate of climb is desired. A section with a camber factor of about .085 is correct for such cases.

The camber factor of each section is given on the diagrams shown here. This number, as stated in previous discussions, is a measure of the lift of the section. A section with a camber factor of (0.11) gives a very high lift. One with a value of (0.085) gives a high lift and a good rate of climb. Values of (0.075) to (0.08) represent sections that give medium lift and a very fast climb, while sections with camber factor values below (0.07) are low lift, fast sections with a high rate of climb but which, on the other hand, have a fast glide and comparatively high sinking velocity. Sections with camber factors of (0.08) or above usually have low sinking velocities. That is, the "drop" per second when the plane is gliding is comparatively little.

The camber factor of any section may be calculated by solving the following formula:

$$F_c = \frac{(3\ H_u + H_B)}{4C.}$$

(This has been given in previous articles.)

In the formula, H_u = the maximum heighth of the upper surface curve; H_B = the maximum heighth of the lower surface, relative to the chord line; C = the chord of the section and F_c = the camber factor. The formula for the lift of any section has been given as:

$$L = (0.002)\frac{(3\ H_u + H_B)}{4C} A.\ V^2\ \frac{(3 + I)}{6}$$

In the formula: L = lift of the wing in ounces; A = the area of the wing in square inches; V = the velocity of the wing through the air in miles per hour and I = the angle of incidence or angle of attack of the wing.

In the formula, F_c may be substituted for the quantity $\left(\frac{3\ H_u + H_B}{4C}\right)$.

The formula will appear as follows:

$$L = (0.002)\ F_c.\ A.\ V^2 \left(\frac{3+I}{6}\right).$$

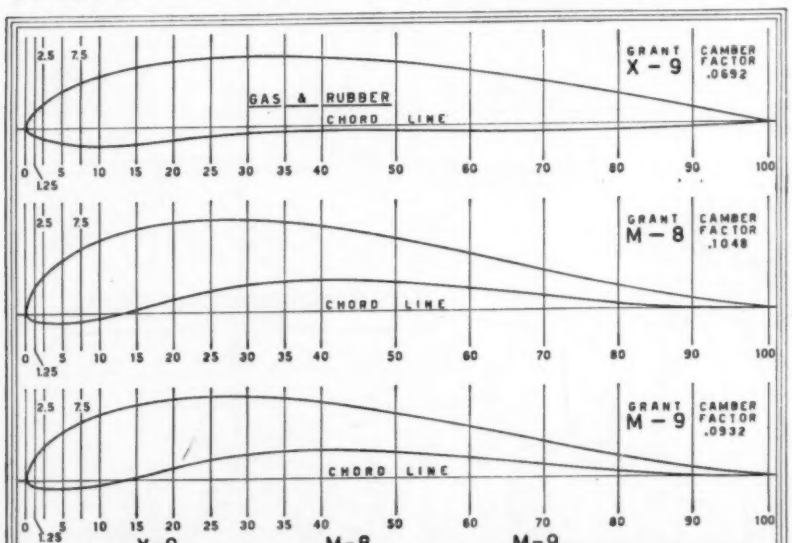
If the numerical value of the camber factor is known, it may be substituted in the formula for (F_c).

The lift of the various sections shown in the diagrams may be readily calculated as the camber factor value is given for each one. As these sections have a wide range of camber factor values they will fill every requirement of the model designer. There is one suitable for any type of plane, or flight, that may be desired.

Let us examine them and see how they qualify for various types of models.

Sections of the (M) series will be our first consideration. They are very similar in shape to a bird's wing and are very efficient in respect to their angle of climb and soaring ability.

First, we see that they are quite thin.



% CHORD	X-9 UPPER	X-9 LOWER	M-8 UPPER	M-8 LOWER	M-9 UPPER	M-9 LOWER	% CHORD
0.00	0.00	−0.00	0.00	0.00	0.00	0.00	0.00
1.25	2.17	−1.07	3.50	−1.00	3.12	−0.89	1.25
2.50	3.37	−1.50	5.06	−1.29	4.50	−1.14	2.50
5.00	4.87	−2.10	7.18	−1.38	6.39	−1.22	5.00
7.50	6.17	−2.40	8.75	−1.20	7.79	−1.07	7.50
10.00	6.97	−2.48	9.95	−0.89	8.85	−0.79	10.00
15.00	8.17	−2.30	11.39	0.33	10.11	0.29	15.00
20.00	8.84	−1.73	12.12	1.74	10.79	11.53	20.00
25.00	9.24	−1.20	12.50	2.98	11.11	2.62	25.00
30.00	9.47	−0.80	12.41	3.68	11.10	3.26	30.00
35.00	9.47	−0.60	12.11	4.20	10.77	3.74	35.00
40.00	9.30	−0.47	11.57	4.43	10.29	3.91	40.00
50.00	8.57	−0.54	9.89	3.88	8.78	3.46	50.00
60.00	7.44	−0.74	7.82	3.11	6.95	2.78	60.00
70.00	5.97	−0.83	5.44	1.94	4.84	1.72	70.00
80.00	4.24	−0.63	3.51	0.83	2.94	0.73	80.00
90.00	2.20	−0.37	1.78	0.00	1.22	0.00	90.00
100.00	0.05	−0.05	0.00	0.00	0.00	0.00	100.00

3 NEW RUBBER-MODEL WING SECTIONS DESIGNED BY C.H. GRANT

This insures high lift with efficiency but prohibits the use of deep spars. Therefore great strength cannot be built into wings with this type of section. In this respect they are most suitable for use on rubber powered models, though they have given satisfaction when used on comparatively small and light gas models. In such cases the rear spar should be about as wide as it is high, and the leading edge of the wing should be covered with veneer forward of the front spar. In this way strength can be built into the wing in spite of its lack of thickness. Generally speaking they are best suited to rubber models.

Sections in the (M) series run from (M-7) to (M-10). The numeral after the series letter denotes the maximum heighth of the camber of the upper surface of the wing relative to the chord or length of the section.

For instance the maximum distance of the camber of the upper surface of the M-9 section above the chord line is equal to 1/9 the chord of the section. (Distance from the leading edge to the trailing edge of the section.) Thus as the lift of similar sections is nearly proportional to the heighth of the upper surface curve, the section number provides some measure of the comparative lift of various sections in any series. The higher the camber, the greater the lift will be.

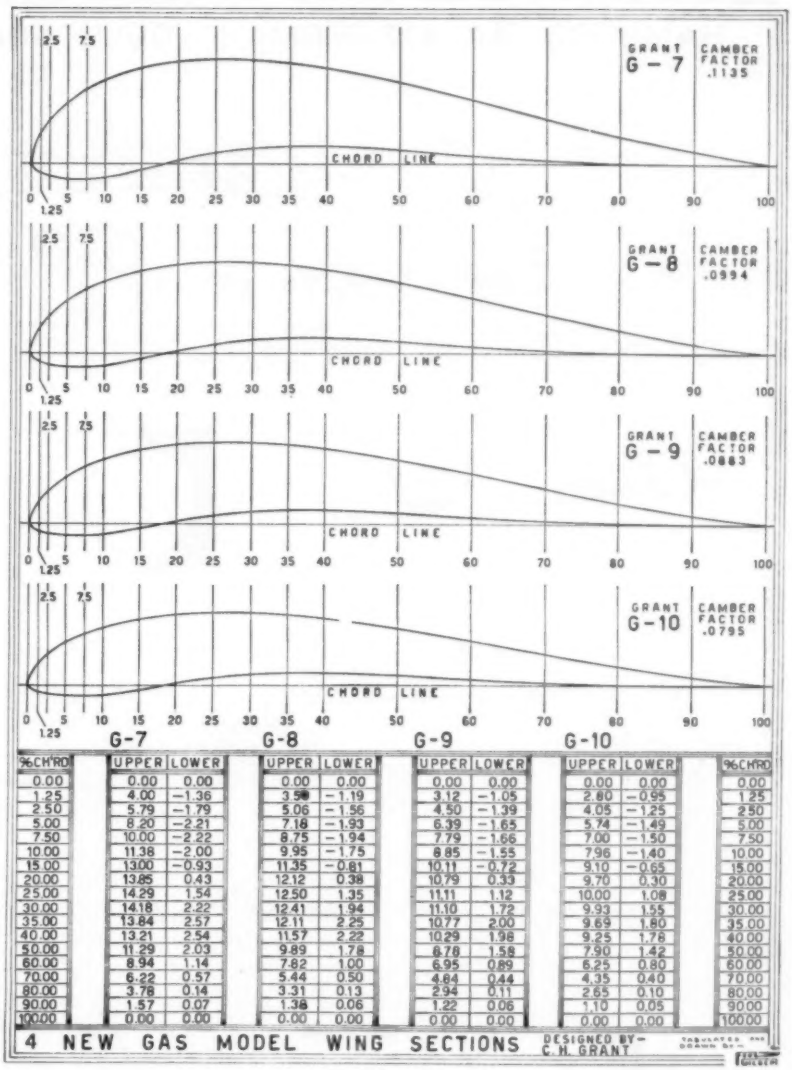
Thus we can see that the (M-8) section has a high lift. This is also indicated by the high camber factor of (0.1048). (The M-7 section given in the October, 1938 issue has a high lift value which is even greater. The camber factor is (0.114).

Such sections should be used on models, the flying speed of which is very slow, or which have a comparatively high wing loading. In the later case the high lift section will allow the load to be carried at a reasonably slow speed *with comparatively little wing area.*

The climb will not be very fast but it will be quite steep if plenty of power is applied. Thus the rate or climb will be good. Another advantage offered by these sections is the very low sinking velocity. The rate of descent on the glide is low. This contributes to the duration qualities of the model.

The (M-9) and (M-10) sections have lower cambers than the (M-7) and (M-8) sections and therefore will fly faster with any given area of wing and weight of model. Consequently they have a higher rate of climb. (Section M-10 is shown in the October, 1938 issue.) They are medium lift sections and are most suitable for the average model. The M-9 section is recommended for Wakefield models.

One of the advantages provided by this series of profiles is the combination of high efficiency and high lift. Usually high lift sections are less efficient than others of lower camber, but the high under camber of these sections contribute largely to the total lift so that the upper camber does not have to be as high as in other cases. This fact insures greater efficiency, for sections with low upper cambers, as a rule, have a higher L/D ration (efficiency) than sections with highly curved upper surfaces.


GRANT G-7 CAMBER FACTOR .1135
GRANT G-8 CAMBER FACTOR .0994
GRANT G-9 CAMBER FACTOR .0883
GRANT G-10 CAMBER FACTOR .0795
CHORD LINE
0 1.25 2.5 5 7.5 10 15 20 25 30 35 40 50 60 70 80 90 100
G-7 G-8 G-9 G-10

%CHRD	G-7 UPPER	G-7 LOWER	G-8 UPPER	G-8 LOWER	G-9 UPPER	G-9 LOWER	G-10 UPPER	G-10 LOWER	%CHRD
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.25	4.00	−1.36	3.58	−1.19	3.12	−1.05	2.80	−0.95	1.25
2.50	5.79	−1.79	5.06	−1.56	4.50	−1.39	4.05	−1.25	2.50
5.00	8.20	−2.21	7.18	−1.93	6.39	−1.65	5.74	−1.49	5.00
7.50	10.00	−2.22	8.75	−1.94	7.79	−1.66	7.00	−1.50	7.50
10.00	11.38	−2.00	9.95	−1.75	8.85	−1.55	7.96	−1.40	10.00
15.00	13.00	−0.93	11.35	−0.81	10.11	−0.72	9.10	−0.65	15.00
20.00	13.85	0.43	12.12	0.38	10.79	0.33	9.70	0.30	20.00
25.00	14.29	1.54	12.50	1.35	11.11	1.12	10.00	1.08	25.00
30.00	14.18	2.22	12.41	1.94	11.10	1.72	9.93	1.55	30.00
35.00	13.84	2.57	12.11	2.25	10.77	2.00	9.69	1.80	35.00
40.00	13.21	2.54	11.57	2.22	10.29	1.98	9.25	1.78	40.00
50.00	11.29	2.03	9.89	1.78	8.78	1.58	7.90	1.42	50.00
60.00	8.94	1.14	7.82	1.00	6.95	0.89	6.25	0.80	60.00
70.00	6.22	0.57	5.44	0.50	4.84	0.44	4.35	0.40	70.00
80.00	3.78	0.14	3.31	0.13	2.94	0.11	2.65	0.10	80.00
90.00	1.57	0.07	1.38	0.06	1.22	0.06	1.10	0.05	90.00
100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00

4 NEW GAS MODEL WING SECTIONS DESIGNED BY— C. H. GRANT

This holds true, however, only if the under surface near the leading or front edge of the wing is curved downward rather prominently before it curves upward as it sweeps rearward toward the trailing edge. You will note that the under surfaces of this series of airfoil sections have this characteristic.

The slight upward curvature of the trailing edge reduces the drag at this point as well as the movement of the center of pressure with changes in the angle of attack of the wing. This produces more stability than otherwise would result.

Now let us consider the qualities of the (G) series of profiles. The upper surface curves of these are exactly the same as the sections with the corresponding numbers in the (M) series. However the lower surface curves of the (G) series are lower than in the case of the (M) sections. This condition has been incorporated in these sections in order to allow space between the surfaces for a deeper and stronger rear spar, which makes them suitable for use on heavy rubber models or gas models.

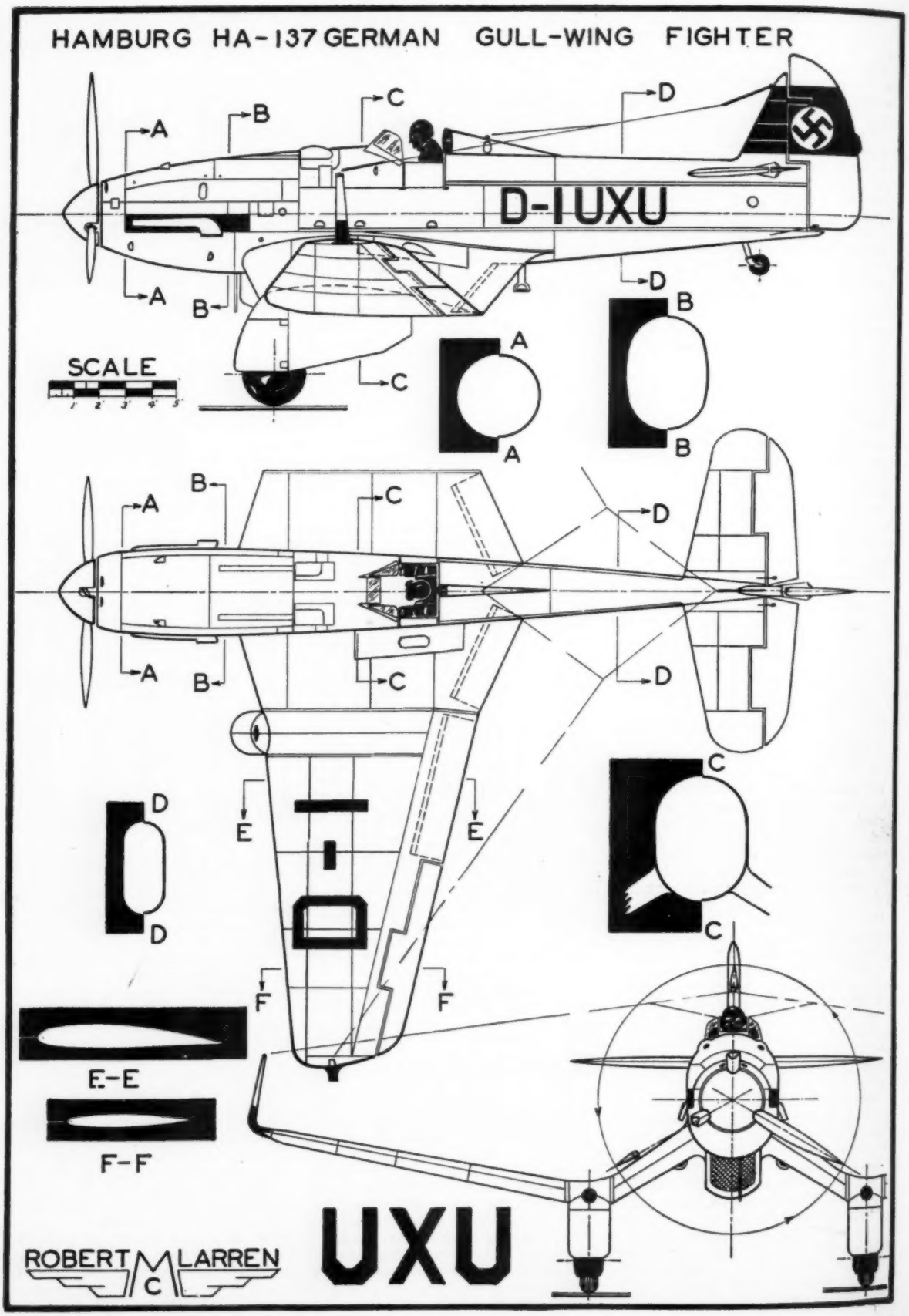
The fairly high under surface camber provides these sections with high lift and low sinking speed characteristics. They are also highly efficient and stable for the same reasons mentioned in the case of the (M) sections.

The profiles (G-10) and (G-9) are especially suitable for the average gas model as they are capable of inducing a high rate of climb and a flat glide. They may be used on Wakefield models also with good effects.

The sections (G-8) and (G-7) are suitable for slow flying or exceptionally heavy models. When it is desirable to obtain a great amount of lift with as little wing area as possible, these sections should be used. Their lift at any given speed is proportional to the camber factor for each section, given on the charts.

The (X) sections have been designed particularly for heavy gas models, though they will act with great efficiency on other types of planes. These profiles are extremely thick so that exceptionally strong deep wing spars may be used. The complete series of (X) sections, except the

(Continued on page 68)


HAMBURG HA-137 GERMAN GULL-WING FIGHTER
D-IUXU
SCALE
E-E
F-F
ROBERT MCLARREN
UXU

The German Devil Gull

BY

ROBERT McLARREN

The Hamburg Ha. 137 single seat fighter. Note the sturdy construction

THE PLANE ON THE COVER

"'THE TIME has come,' the Walrus said, 'To talk of many things: Of shoes—and ships—and sealing wax. Of cabbages—and kings—'." So reads the foolish, lyrical lines of Lewis Carroll's whimsical "Through the Looking Glass." Nonsensical? To the layman—yes! But to the liberty-loving American, the very roots of whose foundation have been rocked with the recent volcanic percussions in Central Europe, that lilting, ludicrous verse when paraphrased becomes the emergent lines of a thundering parody echoing the words of a 19th Century prophet: Charles L. Dodgeson in real life.

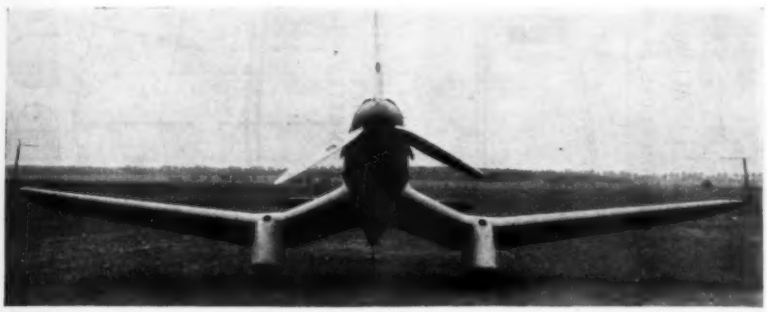
Those words symbolically: "king," der Reichsfuhrer Adolf Hitler, self-appointed King of Germany, has had cause for deep concern for "shoes," his boot-heel of power; "cabbages," the gnawing shortage of food in his country; "sealing wax," his sealed marching orders and commands; and lastly "ships," more elementally symbolical than all the rest with Hitler, Germany and the German people, for German ships and the German shipbuilding trade gave birth to the great Blohm & Voss works at Hamburg, designers and builders of our Plane on the Cover: the Hamburg Ha. 137 fighter.

This plane was designed and built in the vast Hamburg works of the Blohm & Voss Shipbuilding concern. In 1933 this great industrial firm formed an aircraft manufacturing department and placed Dr. Ing. Richard Vogt, famed aeronautical technician, at its head. A year later the Ha. 135 and Ha. 136 models were completed, the first a light bi-plane trainer, the second a low-wing, single-seat fighter. The present Ha. 137 model might be considered a development of this latter design although the earlier type was powered with a radial engine and featured a conventional straght-wing multi-spar design.

The Hamburg Ha. 137 Fighter features a unique wing both in external form and internal construction. In appearance it is a deeply inverted gull-wing cantilever single-seat fighter and dive-bomber. The wing drops sharply away from the fuselage to the landing gear implacements from which it projects tipward with a firm dihedral angle.

Internally its archetypal construction employs an ingenious tubular spar made famous by its successor, the huge four-motored trans-Atlantic Blohm & Voss Ha. 139B float-plane. This spar is the main load-carrying member for both bending and torsion stresses and is situated in the thickest portion of the wing about one-third rearward of the leading

(Continued on page 32)



The front view presents clean lines. Note the gun ports above the wheels

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By

"THE INSTRUCTOR"

A Word to the Wise

What Are Models Doing for You?

CALLING all model aeronauts!

We announce the formation of the L.D.M.A.B. (League for the Defense of Model Airplane Builders) . . . now you wouldn't think we'd need anyone to defend us . . . we're a million-or-more strong, and usually competent to look after ourselves. Here's the purpose of the L.D.M.A.B.:

Next time sister complains you haven't finished your English homework and instead are back at your workbench carving a one-bladed prop for your super-soarer and she demands "What are models doing for you, anyway?" swing into the following:

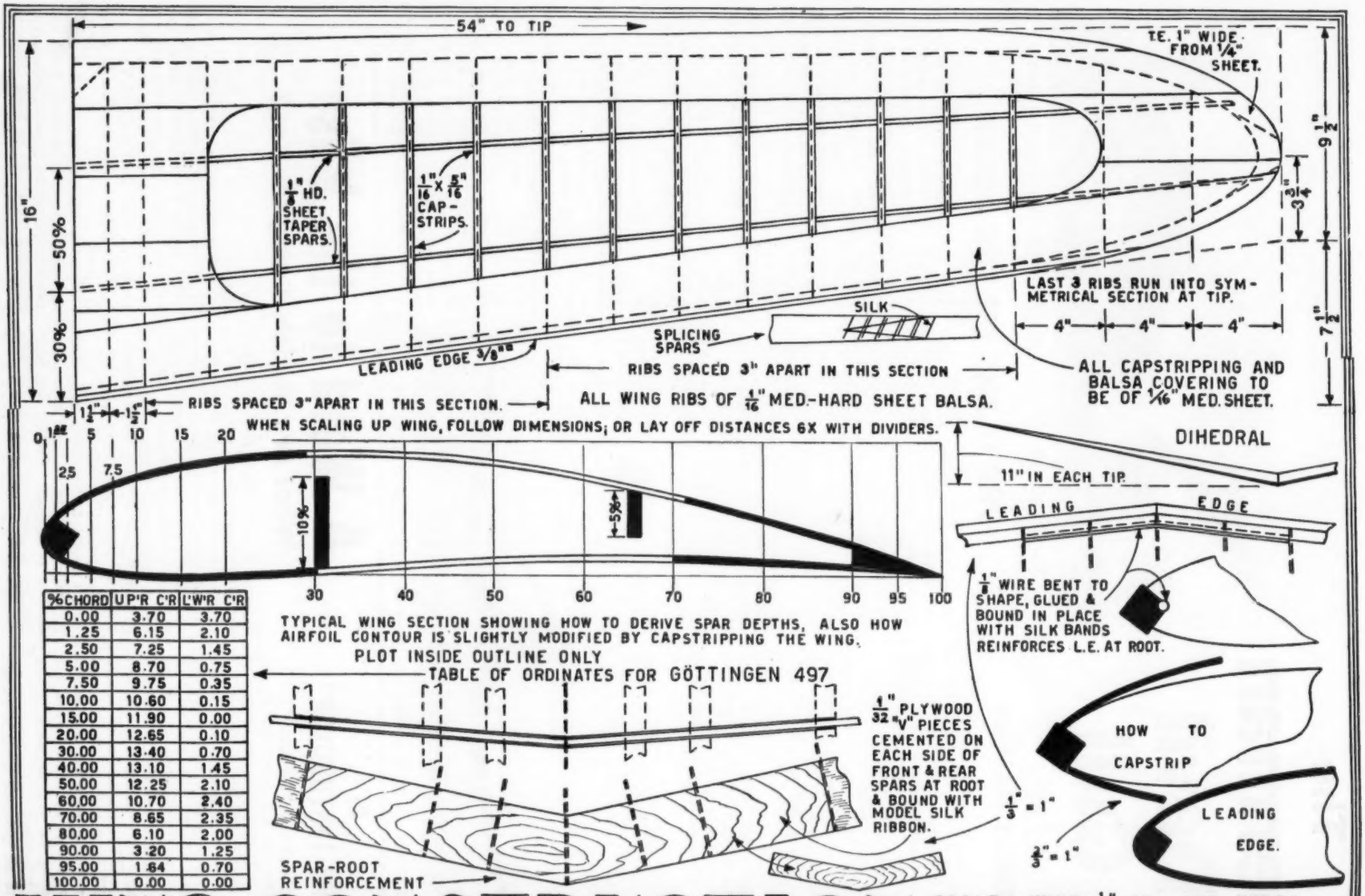
First of all (you tell her!) there are three kinds of hobbies: collecting, craft and recreational. Model aviation is one of the few that covers all three. Most builders collect models, friends, duration records and aviation memorabilia; then they build models (craft); and eventually go out and fly them (recreational). That alone will probably stop her mumblings, but you haven't even started yet, and it serves her right! Continue:

Most model builders, you say, when they take up the hobby know little about drafting or blueprint reading, but after building a couple of models are self-taught experts in both lines. . . . For instance: show uninitiates the plan of that gas job in MODEL AIRPLANE NEWS . . . what does it look like to them? . . . they dunno—maybe a high-speed canning machine, maybe a cross-section of a concertina . . . but, chum, you know and you can construct an exact copy from those plans . . . AND MAKE IT FLY!

That's what model aviation is doing for you!

Here's more: Inform critics that model aeronautics requires a steady hand, patience (ah, that's the one most folks recognize) and the ability to think calmly in

(Continued on page 64)


54" TO TIP
T.E. 1" WIDE FROM 1/4" SHEET.
1/8" HD. SHEET TAPER SPARS.
1/16" X 5/16" CAP-STRIPS.
16"
50%
30%
9 1/2"
3 3/4"
7 1/2"
LAST 3 RIBS RUN INTO SYMMETRICAL SECTION AT TIP.
4" 4" 4"
SILK
SPLICING SPARS
LEADING EDGE 3/8" SQ.
RIBS SPACED 3" APART IN THIS SECTION
ALL CAPSTRIPPING AND BALSA COVERING TO BE OF 1/16" MED. SHEET.
1 1/2" 1 1/2" RIBS SPACED 3" APART IN THIS SECTION.
ALL WING RIBS OF 1/16" MED.-HARD SHEET BALSA.
WHEN SCALING UP WING, FOLLOW DIMENSIONS; OR LAY OFF DISTANCES 6X WITH DIVIDERS.
0 1/2 5 10 15 20 25 30 40 50 60 70 80 90 95 100
10%
5%
DIHEDRAL
11" IN EACH TIP
LEADING EDGE
1/8" WIRE BENT TO SHAPE, GLUED & BOUND IN PLACE WITH SILK BANDS REINFORCES L.E. AT ROOT.
TYPICAL WING SECTION SHOWING HOW TO DERIVE SPAR DEPTHS, ALSO HOW AIRFOIL CONTOUR IS SLIGHTLY MODIFIED BY CAPSTRIPPING THE WING.
PLOT INSIDE OUTLINE ONLY
TABLE OF ORDINATES FOR GÖTTINGEN 497
1/32" PLYWOOD "V" PIECES CEMENTED ON EACH SIDE OF FRONT & REAR SPARS AT ROOT & BOUND WITH MODEL SILK RIBBON.
SPAR-ROOT REINFORCEMENT
1/3" = 1"
2/3" = 1"
HOW TO CAPSTRIP
LEADING EDGE.

%CHORD	UP'R C'R	L'W'R C'R
0.00	3.70	3.70
1.25	6.15	2.10
2.50	7.25	1.45
5.00	8.70	0.75
7.50	9.75	0.35
10.00	10.60	0.15
15.00	11.90	0.00
20.00	12.65	0.10
30.00	13.40	0.70
40.00	13.10	1.45
50.00	12.25	2.10
60.00	10.70	2.40
70.00	8.65	2.35
80.00	6.10	2.00
90.00	3.20	1.25
95.00	1.84	0.70
100.00	0.00	0.00

WING CONSTRUCTION

SCALE — WING: 1/4" = 1" SEE NOTES

PLATE 1

DRAWN BY —

Thracy Petrides with his Dolphin, one of the most efficient contest planes ever built

Building the DOLPHIN

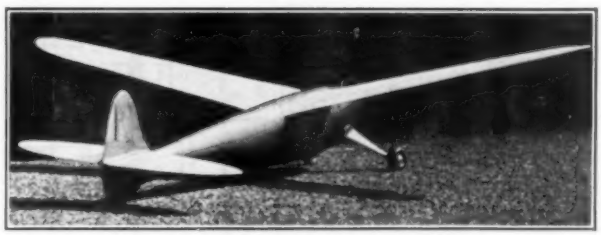
How You Can Build an Efficient Contest Gas Model That Flew Out of Sight in Nine Minutes —Part No. 1

By THRACY PETRIDES and FELIX GILBERT

Scene: Wayne County Airport, Detroit
Time: July 9, 1937, about 10 A.M.

SUDDENLY a huge blue and orange winged teardrop roars off the snowy white runway into the azure, glistening in the sun and nosing upward on its maiden flight. Up, up, up it goes till after nine minutes it is only a speck in the sky.

This is what took place on the morning of the Texaco Event. The model had been adjusted the night before by its builder, Petrides, and when given its first trial flight, it disappeared into the blue. This spoke well for the design and the construction of the ship, but it was disappointing to know that the plane could not be entered in the event because of an abrupt leave of absence.



A rear view shows careful streamlining

Three days after the contest, when the model had been given up for lost, an airplane pilot phoned the hotel in accordance with a notice in the paper, and stated that he had sighted the model from his airplane. The Dolphin had landed in a soft wheat field, and was exactly 24 miles from the point of launching, however, two automobile trips had to be made before the model was located. The car followed under the plane to the approximate spot, while the big ship circled around the vicinity in which the little one had landed. The total gas bill involved in retrieving the plane amounted to $9. If that aviator hadn't sighted the gas job, the latter may never have been retrieved. You know how some of those farmers are.

A streamliner model of this type, due to its high lift and high efficiency is easily adaptable to weight lifting and radio control work. The monocoque fuselage provides a high strength safety factor enabling the model to carry a great deal of weight with the assurance that it remain intact. Of course for this type of work it is essential to maintain the correct center of gravity placement and this must be taken into consideration when making any adaptation. If the builder does happen to be interested in using the model for the above purpose, he is referred to the article on the "Payload Gas Model" in the August, 1938, issue of MODEL AIRPLANE NEWS. The original model had a projected wing area of nine square feet with a weight of 5.3 pounds. This made the wing loading 9.3 ounces per square foot.

Although a Brown Jr. motor was used in the plane with a great deal of success, it is advisable to use a 1/3 horse-power motor in the model. The reason for this is that in previous Nationals, the models were "gassed" according to their weight. The heavier a model, the more gas allotted to it; this gave them all an equal chance. Of course, this system is not now in effect. All motors run for twenty seconds, large or small. We thus see that a model just meeting the weight rule with a maximum of power will stand the best chance. By following the instructions given here, the "Dolphin" may be made to meet the adequate requirements.

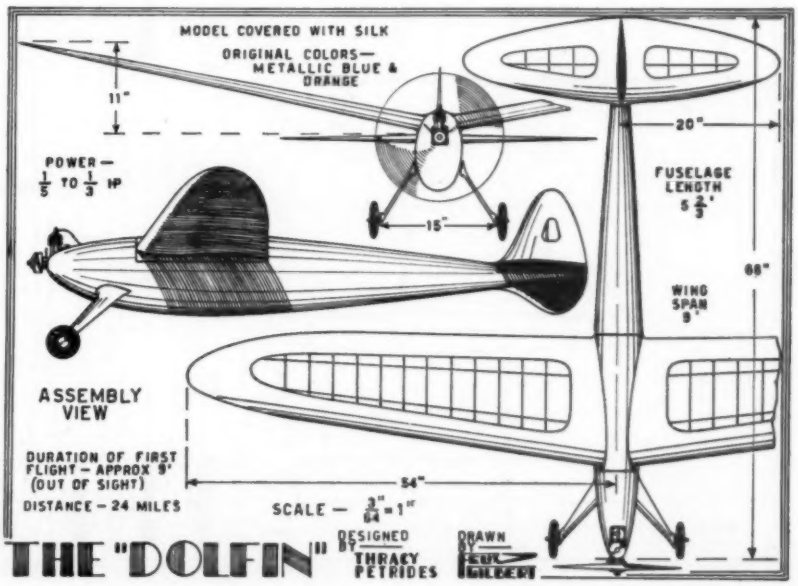
Thus on completion of the model the builder will find that he has a gas job outstanding in performance, appearance and we might add —dimensions.

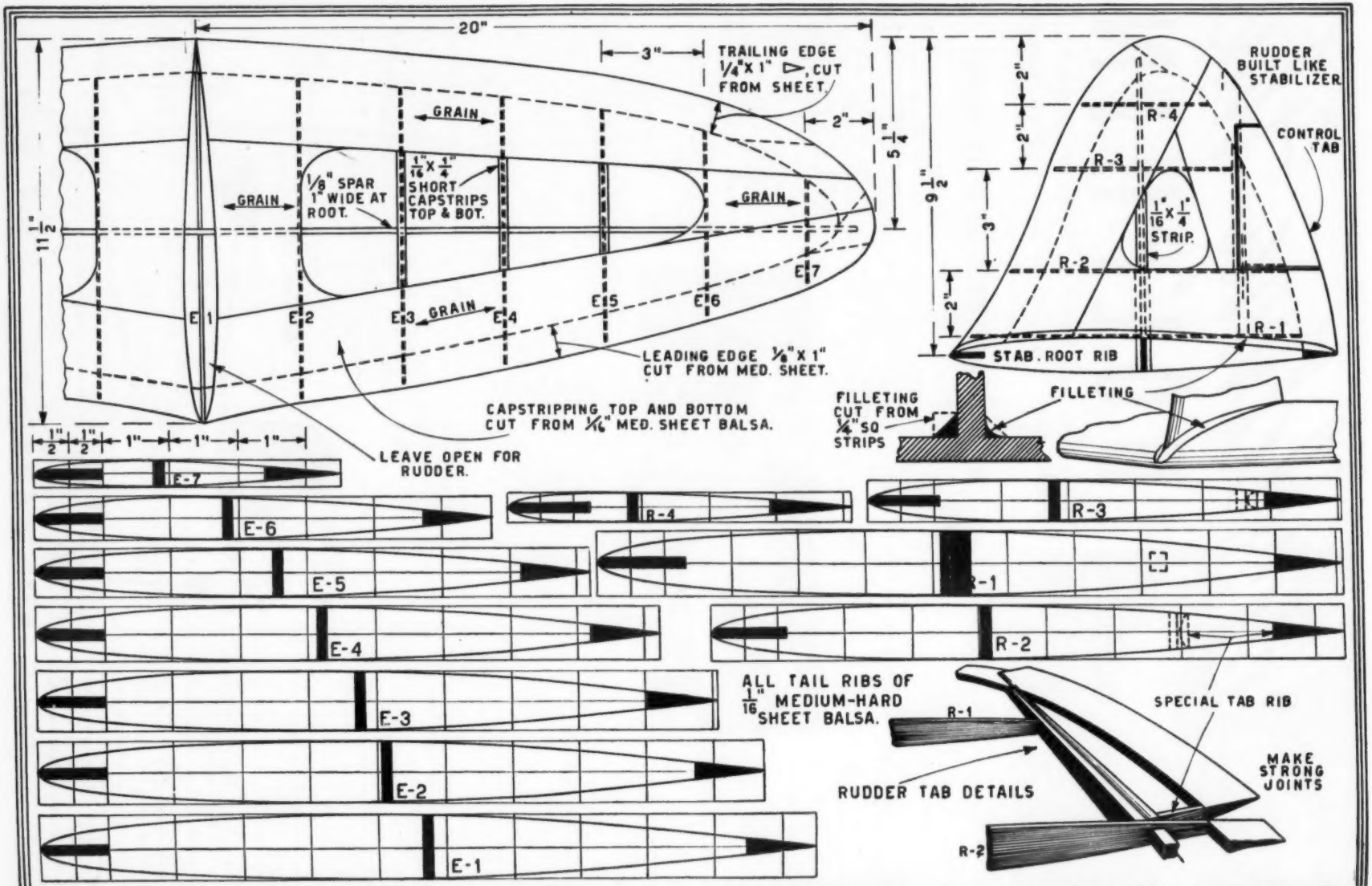
Construction

In this first installment the building of the wing and tail surfaces will be fully described. Always keep in mind that the accuracy of the structure and its alignment determine the success of the performance of the ship.

A full size drawing of the wing half is required. This is easily accomplished by

(Continued on page 56)





TAIL SURFACES AND RIBS

SCALE- SURFACES: 1/4" = 1" SECTIONS 1" = 1"

PLATE 2

DRAWN BY FELIX GILBERT

How TO MAKE YOUR MODEL BEHAVE

How to Test and Adjust Your Model So That It Will Be Correctly Balanced

Article Number 85

Chapter Number 6

By CHARLES HAMPSON GRANT

DESIGNING and adjusting a model plane so that it will fly in correct flight equilibrium is probably one of the most difficult problems that model builders have to face. There are many forces which act upon the plane in flight, and the plane must be so adjusted that these will be in correct balance. It is not an easy task, but one which usually requires considerable experience if the results are to be satisfactory.

The fact was brought out in the last article, Number 84 of this series, that the success of the flight is due, to a large extent, to the inherent or basic design of the model itself. However, regardless of how well the model may be designed, it must be properly adjusted in order to have it operate satisfactorily without crashing.

The character of the basic adjustments of the wing and tail surfaces border on the technique of design. Some may classify them as characteristics of design, or some as adjustments. These basic settings were discussed in our last article. Those who have not read this previous article should do so in order to have a clear conception of the explanation which follows.

These settings which have been described for various models pertain to longitudinal stability. The model may be controlled by modifying these settings in one way or another. This will be described later. However, longitudinal control is not the only consideration. The model plane must have balance and be controlled by the correct setting of the surfaces, laterally and directionally as well.

The next consideration, therefore, is the correct setting of the wings or other parts of the plane to insure lateral poise or balance. If the model builder in carrying out the design of the plane has incorporated features in it which insure lateral stability, no trouble should develop. Briefly, the wing should have the correct dihedral, sweep-back, low center of gravity, or combination of these features. On the average plane the wing should have a dihedral of approximately 8° to 8½°; that is, the tips of the wings should be raised above a horizontal line drawn through the center section of the wing, a distance equal to three-quarters of an inch for every foot of span. In the case of models which have a low center of gravity, (that is, the wing is located a considerable distance above the center of gravity,) the dihedral need not be so large. A wing tip elevation of half an inch for every foot of span may be used in such cases.

In some cases a fin of too large an area may be the cause of loss of lateral balance. Then, when the model circles and "banks" the nose will drop and the model will "dive in." This is due to the fact that the large fin acts as an elevator when the plane is banking. This excessively large area holds up the tail of the plane while the nose or forward part of the ship slides sideways towards the low side of the bank. Thus the nose drops and the plane dives. Therefore be sure that the fin is not too large.

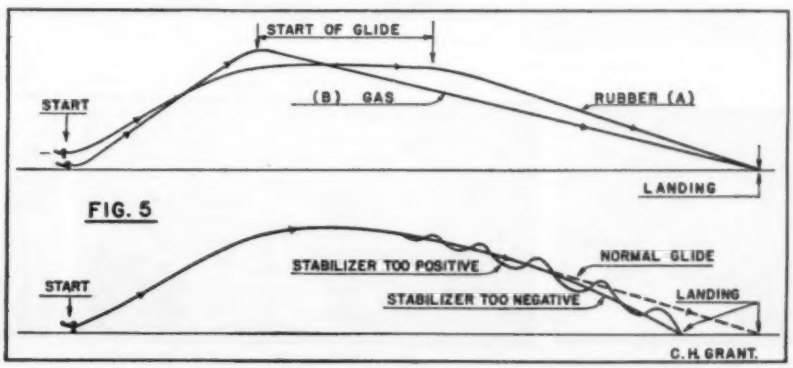
Rubber models should have a fin area of approximately 12% of the wing area. In the case of gas models the fin area should be about 7% of the wing area. If these characteristics of proportion are carefully established in the model prior to any flights which you make, no difficulty should develop in respect to its lateral balance or control.

Next the correct setting for directional control should be established. There is only one factor which should be checked in respect to this phase of balance. That is, the fin should be large enough. If it is too small directional instability will result. Such instability makes itself evident in the form of what is known as "fugoid oscillations." This term may be found rather imposing to model builders but it may easily be recognized when the plane is in flight. Under these conditions the ship will oscillate or roll from side to side and at the same time the tail will swing from one side to the other. The greater the dihedral for any given amount of fin area, the more pronounced these oscillations will be. The remedy is simple: All that is necessary is to add more fin area. If the model has the correct amount of dihedral given above and the proper amount of fin area no evidence of this should occur when the model is in flight.

When all these features of design and balance have been carefully checked and correctly established, the model is ready for its first test flight. This will probably be one of the most anxious moments in a model builder's career. A builder often looks upon his creation as a wayward brain-child. He wonders just what new trick or overt act it is going to execute. In order to avoid the possibility of damage to the model, it is always wise on such occasions to choose a test ground which provides a soft carpet of long grass for possible bad landings.

When the model has been prepared for flight and wound it should be launched carefully in a horizontal position and started on its course at approximately the same speed at which it would fly under normal full flight conditions. Once the model has been released, the keen eye of the model builder should scan the flight of the model for possible defects in longitudinal balance. When the model is in correct balance it will follow a very definite course throughout its flight. Such a course is illustrated by lines (A) and (B) in Figure No. 5. Line (A) illustrates the path that a rubber model should follow. Line (B) shows the path of flight for a gas model. The difference in the course of flight is due to the fact that the power of the rubber motor diminishes gradually until it is fully expended. The power developed by a gas engine in a model plane is constant until the motor stops completely. During the motor run the model climbs at its maximum climbing angle, and whether or not the angle of climb is the greatest one possible may

(Continued on page 52)

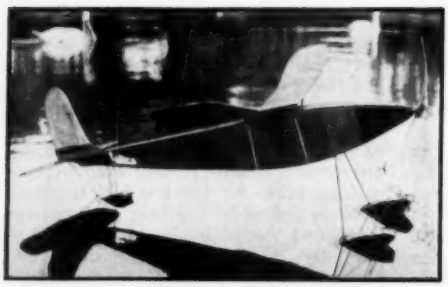


Air Ways

Pict. No. 1. A perfect scale Fokker D.7 by Ralph Guernsey

What Readers Are Doing to Increase Their Knowledge of Aviation in All Parts of the World

NOW that good flying weather has replaced wintry days, many new ideas, in the form of model airplanes, are sailing heavenward. Unquestionably records will be broken by a number of fliers during the coming season; therefore we wish to call to the attention of all Air Ways Club members the fact that they may compete for the Air Ways Club Trophy. Newcomers may not know of this fine trophy which has been donated by MODEL AIRPLANE NEWS. At present it is held by James Cahill of 215 Chauncey, West Lafayette, Indiana.



Pict. No. 2. Peterson's successful "Hydro"

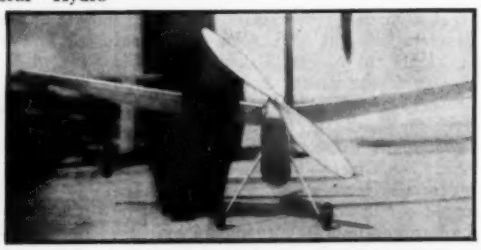
The trophy is given to the Air Ways Club member who makes an official flight, with a rubber powered plane, of the greatest duration. This flight must be under NAA rules, the time taken by NAA officials and the model conform to NAA specifications. The time of Cahill's winning flight was 15 minutes, 45.1 seconds. The trophy will be given to any Air Ways Club member who exceeds this time. Any type of rubber powered model may be used.

So, fans, get out your brain-children and let them ride the thermals to new records. If you make an official flight which exceeds the present record made by Jim Cahill, and you are an Air Ways Club member, let us know immediately; giving the official time, the person who timed the flight, whether or not he is an NAA official and general specifications of your model.

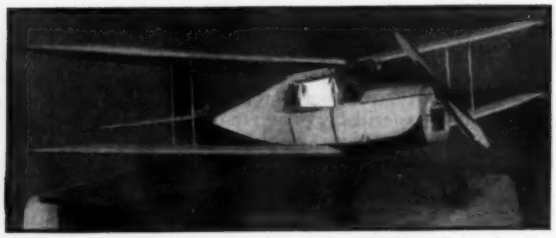
A picture, No. 1, of one of the most beautiful scale models we have seen appears at the head of our column this month. In fact it is so realistic in appearance that one might easily mistake it for a full size plane. It is a Fokker D-7, built by Ralph Guernsey of Posey, Calif., one of our old contributors. Guernsey says the ship was built from a Cleveland kit: however, there are many extra details which he has added. A number of these details were disclosed in drawings of the Fokker which appeared in MODEL AIR-

(Continued on page 59)

Pict. No. 4. S. Orzeck and his 8 foot soarer



Pict. No. 7. James Wade's plane and his mascot



Pict. No. 3. A scale "Moth" with folding wings, by M. Holmes

Pict. No. 6. (Right) Fokker models "above the clouds"

Pict. No. 5. Busy hands—

Pict. No. 8. Modelers get together in Spain

Pict. No. 9. The Laton, Cal. Arobugs

National Aeronautic Association Junior Membership News

Prepared by National Aeronautic Association, Dupont Circle, Washington, D. C.

A form containing details about the new gas model insurance and an official application will be sent upon request. Send a card to the National Aeronautic Association, Dupont Circle, Washington, D.C., stating whether or not you are a member of the N.A.A. Gas Model Division, and you shall receive your copy immediately.

Something New for Gas Modelers

Your attention is called to an advantage in gas model membership which, according to the letters we receive, is not too well known; this in spite of the fact that the information is given on the reverse side of each N.A.A. gas model license.

It is this: gas model flyers holding the N.A.A. Gas Model License are privileged to compete in rubber-power events at N.A.A.-sanctioned meets. In the words of the gas model license, "—this Gas Model Flyer's Annual license also covers the flying of rubber-powered craft and other models at sanctioned meets or contests."

So there y'are, mister! Are you too firmly entrenched in S.A.E. 70 and spark plug clearance that you can't give those other prizes a tumble? A washed-out gas job makes it a long day 'til you can go home, and you might as well spend your time profitably in giving the rest a little competition. Some fellows find that keeping their hand in on rubber models makes for more accurate diagnosis of faults and more and better gas model flights. Make one or two and try it out; doesn't cost anything to fly them!

Gas Meets		*Rubber Meets*	
May	7th	May	28th
June	4th	June	18th
July	2nd	July	16th
August	27th	August	13th
September	24th	September	10th

All meets will be N.A.A.-sanctioned, and all gas models must carry N.A.A. numerals. Trophies, medals, and merchandise awards will be presented for both series. Additional information may be obtained by writing to E. Schaffhauser, 636 North 10th St., Allentown. Be sure not to miss this event.

Outstanding winners of Merit Plan System of the Edith Van Orman N.A.A. Model Chapter, Akron, O. Awards based on outstanding flights during past year. L. to R: Millard Broughton, Leo Bailey, Henry Thomas, Mike Gaydos, Bernarr Anderson, Rich Bodle, Rencel Hill, Renford Hill

Allentown Chapter Announces Meet Schedule

The N.A.A. Flying Keystone Model Airplane Club, Allentown, Penna., will sponsor the greatest outdoor model airplane program ever organized in the Lehigh Valley. This series will consist of five gas meets and five rubber meets. Anyone residing within the Lehigh Valley Metropolitan Area (as designated by the Chamber of Commerce) is eligible.

All meets will be placed at the Allentown-Bethlehem Airport on the following dates. Dates may be altered with a two-week notice to that effect in the local newspapers.

Schedule of N.A.A. Contests

May 13—Outdoor rubber and gas meet at Ford Airport, Detroit, Mich., under direction of Art Vhay. Trophies, medals, merchandise.

May 14—Annual S.M.A.C. invitation meet at Syracuse Airport (gas) and Meadowbrook Field (rubber). Trophies, medals, merchandise. For information write to Harry C. Copeland, director, 214 Hudson Street, Syracuse, N.Y.

May 21—Outdoor gas and rubber at Rock County Airport, Beloit, Wisconsin. Trophies and merchandise. Conrad Hansen, Jr., director, 2372 Riverside Drive, Beloit, Wisconsin.

May 27—Outdoor rubber and gas at Ford Airport, Detroit, Michigan. Trophies, medals, merchandise. Art Vhay, director, Department of Recreation, Detroit, Michigan.

May 28—State Exchange Model Meet at Sidney Airport, Sidney, N.Y. Trophies, plaques, medals and merchandise. Harry C. Copeland, director, 214 Hudson St., Syracuse, N.Y.

May 28—Gas model hydro meet (seaplane); trophy. R. L. Webber, director, 217 N. Desplaines, Chicago, Illinois.

May 30—Outdoor rubber meet at Stiles Street Field, Linden, N.J. Prizes. Frank M. Krysiak, director, Old City Hall, Linden, N.J.

June 4—State-wide Gas Model Meet at Curtiss-Wright Airport, Milwaukee, Wisconsin. For information, write to C. F. Higgins, 231 W. Wisconsin Avenue, Milwaukee, Wisconsin.

June 4—Invitation rubber met at Topeka, Kansas; Harold J. Borger, 509 N. Alleghaney St., El Dorado, Kansas.

June 11—State Rubber Meet at Topeka, Kansas. Harold J. Borger, 509 N. Alleghaney St., El Dorado, Kansas.

June 11—Gas and rubber meet at Aurora, Illinois; $100 in prizes. Russell A. Perry, director, 902 Gleason St., Aurora, Illinois.

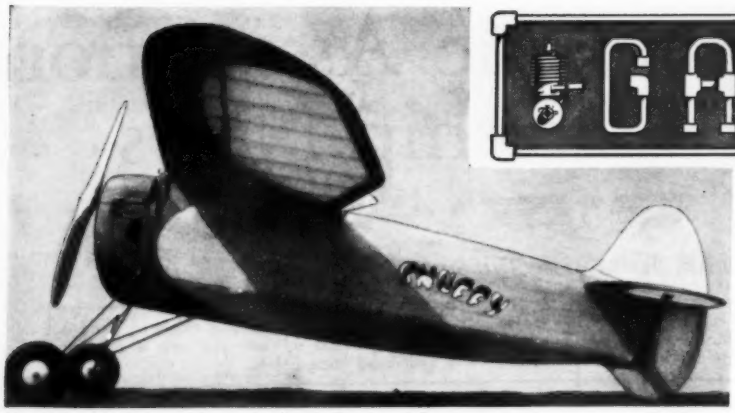
June 17-18—Gas and rubber Second Annual Northern Indiana Model Airplane Builders Contests. $221 in cash prizes. Bob Roberts, director, 4490 Broadway, Gary, Indiana.

(Continued on page 69)

1939 NATIONAL MODEL RULES OUT

The new rules for model aircraft, as passed by the Academy of Model Aeronautics at the November meeting in New York City, are now available. This is the first and only official release of rules for model aircraft for 1939 to date. **If you desire a copy, mail your request to the National Aeronautic Association, Dupont Circle, Washington, D.C.**

JOIN THE NATIONAL AERONAUTIC ASSOCIATION!
SEND FOR APPLICATION BLANK TO N.A.A., DUPONT CIRCLE, WASHINGTON, D.C.



GAS LINES

Official Section of the National Aeronautic Association Gas Model Division

The I.G.M.A.A. Has Been Reorganized. Read Here How You Can Join This World-Wide Association

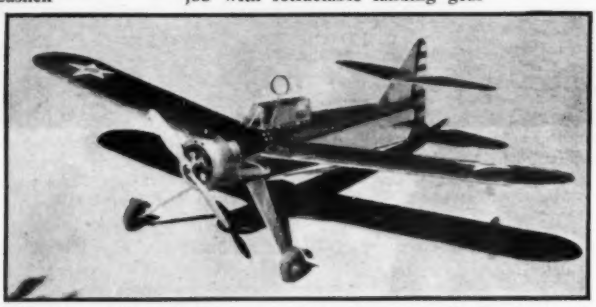
Pict. No. 1. A compact, speedy little gas job that has been flying for over a year

Pict. No. 2. Harrison's Cavalier gets off

Pict. No. 4. One of the first gas powered model flying boats, by Frank Lashek

Pict. No. 3. Hackford's low-wing gas job with retractable landing gear

Pict. No. 6. Jerry Chapman receives congratulations from "The Press"



Pict. No. 5. One of the most unique planes ever built. A simple all-metal gas model by Henry Hughes

WE WISH to announce some big news this month; and no doubt it will be a big surprise. The International Gas Model Airplane Association is coming to life again!

Many of the old units are still in existence and are very active. Unquestionably these will wish to know how they can reestablish themselves as units of this organization. The organization will be set up on the following basis:

It will be composed entirely of units. These units must be composed of at least five gas model builders. In order that all units may join the organization there must be an established leader who will send in the names, addresses and ages of the members of the unit to which he wishes to issue membership cards. The membership cards will be issued by the leaders; he will fill in these cards in the proper manner and be responsible for their correct distribution. Membership cards will be supplied by MODEL AIRPLANE NEWS and will be sent to the leaders upon receipt of the names of unit members.

A chapter will be sent to each unit that is accepted in the organization, together with a unit number.

In the case of old units who have in the past had a number and charter issued to them by the former I.G.M.A.A., the old numbers will be reissued to these units provided they write in and make their request before July 1st, 1939.

One provision for membership in this new organization is that the unit shall be an N.A.A. unit or individual members shall be N.A.A. members.

Any meets sponsored by the I.G.M.A.A. will be run under N.A.A. rules. However a special record list will be kept by the I.G.M.A.A. organization.

In other words, a member who is not an I.G.M.A.A. member may hold a world's record in a particular class. However an I.G.M.A.A. member may hold the I.G.M.A.A. and N.A.A. record in that particular class. Of

Pict. No. 7. Mrs. W. J. Bowers and the plane that she built

Pict. No. 8. The Yakima, Wash., model club holds a contest

course the I.G.M.A.A. record and the N.A.A. record will be the same, if the record holder is a member of both organizations.

The I.G.M.A.A. trophy is now held by Roland Fischer of 4510 Elm Court, Denver, Colorado. This was given for the flight of greatest duration with 1/16 ounce of gas per pound of weight of model. However the N.A.A. rules have been changed to a motor run of twenty seconds duration. Therefore after July 1st this trophy will be awarded to that I.G.M.A.A. member who establishes the flight of greatest duration with a twenty second motor run. This will give I.G.M.A.A. members a chance to win this trophy at the "Nationals" to be held in Detroit immediately after the first of July. Any flight in order to be considered a winning flight must be an official N.A.A. flight and the plane must conform to N.A.A. specifications.

All the units who wish to join this organization should write in immediately and have their unit recorded on its rolls.

One unit has already been reorganized. Mr. Robert K. Allen of 114 South Sheridan Avenue, Pittsburgh, Pa., leader of former unit No. 3 has reorganized this unit into a very active body. Though the new unit has been in existence only a few weeks, it has grown with leaps and bounds. Bob appears to be in the front line, as usual.

Readers will want to know what many of the gas model builders are doing in various parts of the country, so we will give you a few glimpses of their activities. In picture No. 1, as our heading this month, we have a small 36 inch Elf powered job, designed and built by Paul Plecan of 36-11 Steinway Street, Long Island City, New York. It is named "Snuffy." We consider this rather appropriate as it is a short, stubby, active little "sky-baby." It has 220 square inches of wing area and a 60 square inch stabilizer. The fin has 20 square inches. The prop has a diameter of 10-1/2 inches and a pitch of 6 inches. The fuselage is covered with 1/32" sheet balsa and the whole job weighs 14-1/2 ounces. Plecan has been flying this for over a year with unusual success.

Picture No. 2 is an action shop of Fred Harrison's Cavalier. Harrison lives at 224 Warwick Lane, Lynchburg, Virginia, and is a member of the Virginia Model Association. This association is composed of clubs from Roanoke, Lynchburg, Richmond, Portsmouth, Ocean View and Hampton. They print their own monthly which all chapter members receive. Many helpful experiments relative to models have been run off in the smoke tunnels at Langley Field, under the direction of Mr. Eastman N. Jackobs, N.A.C.A. engineer, who is a member of the Hampton chapter. They have their own club room and laboratory at 40 Mantea Avenue, Hampton. The Lynchburg section of this association has fifteen active members. Three meets are planned for the coming summer season. Last year over forty entrants took part in the state contest held in Richmond. We are indebted to Mr. Rutledge Fuller, secretary, of the Hill City Gas Model Association (Lynchburg) for this information.

Irving Hackford of 52 Orchard Avenue, Gardenville, New York, lives near the Curtiss and Bell Aircraft factories; and thus has become extremely interested in planes of all types. He has found that building gas models is the most convenient way of putting his aeronautical ideas into practice. He has sent us picture No. 3, showing a low-wing racer which he has just finished. You will note the influence of modern, large-plane design on this model. One of the features of the plane is its retractable landing gear; another is the self-stabilizing device for which Hackford has great hopes. From our personal experience we have found that these devices are fine in theory but never work out in practice, especially if they depend upon gravity for their operation. Many times the force which holds the weight of the stabilizing device in place is not only gravity but a combination of gravity and centrifugal force. This occurs in a bank or turn. Under these conditions the device does not operate properly and will throw the plane into a spin or dive. Hackford has not given the plane a thorough test as yet; he is waiting for some nice weather.

Gas engine power provides a model builder with an excellent means of making flyable scale models. Frank Lashek of 30 Broad Street, Manasquan, New Jersey, has just finished the construction of a Fairchild seaplane, which is shown in picture No. 4. It has a wing spread of five feet and is powered with a Brown Junior "D" motor. The body is covered with bamboo paper, all except the bottom which is covered with balsa sheet in order to take the pounding of the water. Lashek says he has not tested the model as yet. Probably other model builders know how he feels after spending many hours of work and finally the moment of the first flight approaches. He says he is waiting for some warm summer weather. Perhaps Lashek has a vision of swimming after his plane, and does not care for cold water.

If you want to see a "pretty" gas job take a look at picture No. 5. Not only has it fine lines but it is made entirely of metal. It was built by Henry Hughes of San Mateo, Calif., Box 248. The span of the ship is four feet and weighs just under three pounds complete, when powered with an Atwood Phantom motor. Hughes says:

"The ship has seen a fair amount of service and seems practically indestructible. I have been building metal jobs since 1936 and have developed the construction to a fair degree of perfection.

"One of the fine points is the speed with which you can build ships. The fuselage, in this case, took less than two hours. The weight is less than wood when building for an equal strength ratio."

Hughes says it is difficult however to change the design once work on the model is started—the design must be complete prior to the construction. He continues:

"I developed a rivet press that forms double round heads of great precision without 'plate slush' when pressing. If I used 'Dowmetal' instead of ST-27 aluminum I could further cut weight. There is no press or forming work necessary on this design.

"The ship uses single wire (automotive) electrical system due to its metal shell, mounts, etc. Also it is fireproof!"

We have some news and picture from Mr. R. W. Billett of 2548 Nicollet Avenue, Minneapolis, Minn., who is a contest director of the Minneapolis Model Aero Club. This is a very live-wire organization and is imbued with the real sporting spirit. We know this to be a fact, as we have had more-or-less intimate, personal contact with the leaders. The club put on a very successful winter contest on February 26th. Mr. Billett says:

"What was originally planned as a small informal contest turned out to be a most enjoyable and successful event. 38 entries were received, some from out of town contestants as far away as Duluth, Minn., and Forest City, Iowa. In spite of the cold and rather high winds, many successful flights were made. Before the day was over, a large percentage of the planes were cracked up but all contestants seemed more than pleased with the idea of winter flying. The original site of the contest was to have been Lake Calhoun but a last minute decision of the Park Board necessitated a change to Cedar Lake. The smaller size of the lake and the fact that it is surrounded by wooded lots contributed largely to the number of crack-ups, many of the ships finding their final resting places amongst the branches of large trees. Motor difficulties were surprisingly negligible considering the temperature.

"No weight rules were in force and ships were all flown in one class, the only rule being the new 20 second motor run rule. The small ships performed well against their bigger brothers; in fact a modified Buccaneer '48' won the meet with Standard Buccaneers taking second and third respectively. It was a day that Bill Effinger would have been proud to have witnessed.

"First place went to Ray Van De Walker with a total time of 2:24.0 for three flights. Arthur Glessner won second with 2:13.1, while Jerry Chapman, in the lead until late in the afternoon, came in third with 2:07.3. The best single flight of the day was made by Hal Jeppeson with his new Denny-powered Zenith. His was a spectacular, zooming flight that came down on the lake about a mile from the starting place with a time of 1:12.0 on a 16 second motor run."

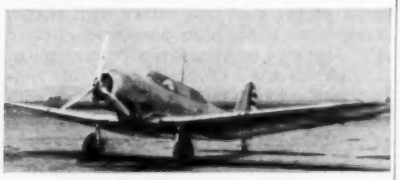
Picture No. 6 shows Jerry Chapman with his plane at the contest. He is being congratulated by Contest Chairman, Hal Jeppeson, as being a probable winner; but unfortunately Jerry wound up third instead of first. You will note the crowd in the background of the picture: We give you three guesses as to what they are looking at—we bet it is either a gas model or somebody who has "passed out cold." (Possibly due to the winter weather!)

Peter Bowers of Los Altos, Calif., Box 357, is one of our old contributors. Now we have another member of the Bowers family who has taken up gas modeling—it is his mother, Mrs. W. J. Bowers. Pic-

MODELCRAFT
RUBBER POWERED MODELS
THE WORLD OVER

SEVERSKY P 35

This ship is said to do over 300 m.p.h. Kit has turned cowl, hard wood prop, cement dope, trim color, and easy to follow plans. You will like this ship. Wing span 24 inches.
Add 10c Postage..... **$1.00**

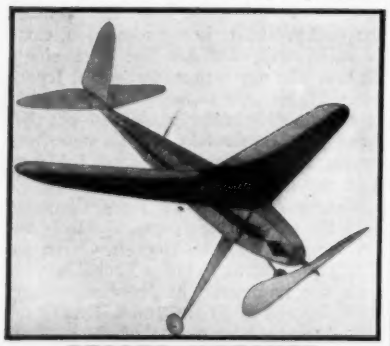


NORTHROP A 17

This high speed attack plane is known to all interested in planes. 24" accurate model. Detailed plans make building easy. Kit has turned cowl, cement dope, trim color, hard wood prop, and balsa.
Add 10c Postage..... **$1.00**

30 in. PACIFIC ACE

A practical and durable commercial model. Easily constructed from well drawn and detailed plans. Kit contains an ample supply of first grade wood and high quality cement. Comparable with and out-flies most dollar kits. Add 10c for Postage..... **25c**
40" Model, same ship . . . add 10c postage..... **50c**



RECORD WRECKER

Newest Modelcraft Sensation! With a 26" span the Record Wrecker includes freewheeling unit, rubber lube, contest rubber, best quality balsa, cement, dope and large full size plans.
Add 10c for postage..... **50c**

MODELCRAFT
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ture No. 7 shows her with her gas model, "Mrs. Stars," which was built and entered in the adult event in the 1938 California State Championships. She took third place. The ship has a six foot span and is powered with an Ohlsson motor. The weight, with ten ounce wing loading, is three pounds, three ounces, and is a duplicate in design of Peter's "Rebel," the first of which was built in 1937. "Mrs. Stars" is the fourth model of this design to "take the air." The climb of the ship, checked by a transit, was 944 feet per minute. The tail surfaces and fuselage are covered with sheet balsa. The shape of the fuselage at the rear of the wing is triangular, as may be seen in the picture. A Gottingen 497 section is used. The feminine touch is supplied by lace curtains which trim the cabin windows. Peter says:

"Last August my mother put curtains on one of my ships and I am still being kidded about it."

One of the most active gas model spots in the country is Yakima. Picture No. 8 shows a group of fliers who attended the Yakima Gas Model Contest, held last summer. In fact the activity has become so great that it has drawn the attention of the Spokane County Commissioners, who have dedicated a tract of land just outside the city limits for use as an airport. This is used for contests which take place periodically. Our hats are off to the Commissioners of Spokane!

It is too bad that other communities do not realize the value of this sport in directing the energies of their young people into constructive channels. They could contribute immensely to their welfare if they would take sufficient interest to provide a special place in each community, such as Spokane has done, for the flying of gas and other types of models.

Metropolitan Model Airplane Council Meet

Record breaking performances featured the second of the season's gas model contests sponsored by the Metropolitan Model Airplane Council, held March 19 at Creedmore, L.I., N.Y., in which nearly 200 contestants participated.

Henry Struck, second-prize winner in the first contest of the year, emerged victorious in the Class C event, with a three flight average time of 5:41, which is believed to be a new N.A.A. record. His longest flight was 9:12, out of sight, although the plane was recovered later in the afternoon. Struck's ship, a six-footer powered by an inverted Brown, Jr. "D," was his own design. Among the features were inverted motor, long tail moment arm, faired single landing wheel and an unusual tail structure. Second in this classification was Leon Shulman, who flew a Thermal Magnet on three flights to average 2:51, his longest flight being 4:41. His plane was powered by a Dennymite. Third was Bernard Gross, who flew his Brown-powered Commodore out of sight in almost the first flight of the day. The ship was in sight 6 minutes and 29 seconds, and was recovered later. It was reported to have landed in a door yard some seven miles away almost three hours after being launched. Other Class C winners were Sal Taibi, Tony Bacchi, P. Desbrosses, Jerry Stoloff, J. Leghorn, M. Benish and F. Moss.

Honors in the small motor class went to Sal Taibi, who took first in Class C in the contest held February 22nd. Taibi flew a Diamond Demon, powered by an Ohlsson "23," to what is believed to be a new N.A.A. record of 3:06 average of three flights. His longest flight was 8:12, out of sight, his plane catching the same thermal in which Struck's plane disappeared. However, unfortunately, his ship has not yet been recovered. Second place was taken by Amos Calleson, with an Ohlsson powered Buccaneer 48, while Leon Shulman flew an Ohlsson powered "Mike" to third place. Other winners were Bill Effinger, F. Delude, Gordon Murray, W. Citron, William Schreer, Joe Raspante, and Harold Henricksen.

Several planes flew out of sight during the afternoon, perhaps the most remarkable flight being recorded by Maurice Schoenbrun in Class C. His plane, a Brown-powered six-footer of unique design, had a 24 second motor run, which was checked as a delayed flight. However, unofficial timers caught the plane almost directly over the field 14 minutes later. It disappeared shortly after that but later in the week Schoenbrun received a post card stating that the plane had been seen to land in a tree off Sunrise Highway some 31 miles east of the flying field about 5 hours after launching. When recovered the plane was unharmed except for a slight rip in the wing covering.

Prizes consisting of trophies and accessories were awarded to the victors in the meet. The winning records have been forwarded to the N.A.A. in Washington for official certification under the new gas model rules. Another contest, open to members of clubs affiliated with M.M.A.C. will be held in April. According to Irwin Polk, President of the Council, the coming of better flying weather is expected to result in an event greater turn out of gas model builders and flyers.

In charge of the meet were Carroll Moon, Leon Shulman and Sam Block, under the policy of the Council to delegate meet director posts to council members in order that all may have experience in supervisory posts of this nature.

Contests

On May 21st, 1939, the East Paterson Gas Model Club will sponsor a National Aeronautic Association-sanctioned meet. The meet will be held at Cherry Hill, East Paterson, New Jersey, located approximately six miles west of Bendix Airport on Route 6. All N.A.A. members are eligible for competition. The entry fee will be 25c, payable at the field. Official flights may be taken between 10 A.M. and 5 P.M. Application blanks may be obtained from Roy Oliva, secretary, East Paterson Gas Model Club, 429 Linden Street, East Paterson, N.J.

The Flint Gas Bugs, Y.M.C.A., Flint, Michigan, wish to announce that they will sponsor a gas model contest at Bishop Airport, Flint, on Sunday, June 4th. There will be duration events for large and small bore engines, also a pay-load event.

MISS TINY Wins FIRST! SECOND! THIRD!

-IN THE FIRST CALIFORNIA OPEN, 20 SECOND ENGINE RUN, CONTEST AT POMONA, MARCH 5th 1939 *FLYING AGAINST 260 SHIPS OF ALL SIZES.*

Barney Snyder

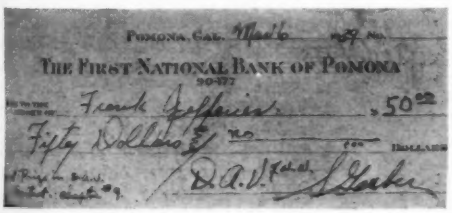
MISS TINY WINS $50.00 FOR FRANK JEFFERS, PLACING 1st AT POMONA

A pocket edition of the Pacific Ace, 46" constant chord wing. For Ohlsson 23, Phantom and other 5/8" engines. Wing span, 46". Hi-Speed Deluxe Kit contains spun cowl, silk, 2½" Volt Air Wheels, cement dope, die-cut ribs, plenty of good balsa, and full size plans. Price **$3.95**

Standard Kit same, but with bamboo paper covering **2.95**

Dry Kit complete except for wheels, covering, cement and dope **1.95**

Plans only **25c**



ORDER YOUR MISS TINY NOW!

Start picking up these souvenirs. Easy to look at and easier to build, an exceptional performer, it is the greatest dollar for dollar value of any kit in the U.S.A.

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BROWN

We carry a complete stock of Brown Motors and Parts.

Model "D" $12.50 Post Paid
Model "C" $18.50 Post Paid
Model "B" $21.50 Post Paid
Model "M" $16.50 Post Paid

OHLSSON

GOLD SEAL
For that extra margin of performance.
SPECIFICATIONS
Horsepower 1/3, Bore 7/8", Stroke 15/16", 500 to 10,000 r.p.m.
.....$18.50 Post Paid

MODEL "23"
Choke-full of power, speed and stamina!
SPECIFICATIONS
Horsepower 1/7. Bore 5/8", Stroke 5/8", Bare weight 4 1/2 oz., Height 3 9/16"
.....$16.50 Post Paid

HI-SPEED

1/7 H.P. 6500 R.P.M. Weight bare 3½ oz. Runs upright or inverted; fully assembled, complete with coil and condenser.

$12.75 POSTPAID

THE MODELCRAFT AWARD!

$100.00

WILL BE AWARDED TO

the winner of the 1939 nationals providing he is flying a MODELCRAFT gas job. Be a winner! Buy a Modelcraft Kit and get in the Champion class. Start right now—send for our FREE Catalog of latest Gas and Rubber Models and Supplies.

NOTICE TO DEALERS

We will pay $25.00 to the dealer who sells the winning *Modelcraft Gas Kit* in the 1939 Nationals.

1939 PACIFIC ACE WON 1st PLACE AT SAN DIEGO

With 1 hour and 5 minutes on a 30 second engine run. This was the winner's first ship and he finished it just in time to get in the contest. 66 in. tapered wing. De Luxe Kit contains tapered spars, beveled and tapered trailing edge, die-cut ribs, turned aluminum cowl, 1 qt. gas dope, 1 pt. cement, 3½ yds. super silk, formed landing gear, 4½ in. inflatable air wheels, dural wire, alum. tube, washers, bolts, haskalite, dural sheet, hook up wire, switch, selected hard balsa, full sized, black and white plans with test flight instructions, complete **$8.50**

Standard Kit with bamboo paper, ½ pt. of dope, 1 pt. of cement and 3½ in. air wheels **$6.25**

Dry Kit same as above without cement, dope, silk or wheels **$4.75**

Plans only **50c**

COMPLETE LINE
Gas and Rubber Powered Models and Supplies

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7306 SOUTH VERMONT AVENUE, LOS ANGELES, CALIF. ★ THE LEADING SUPPLY HOUSE OF THE WEST ★

DOUBLE YOUR FLYING!

You don't need a calm day to fly the **"PROFESSOR"**
(3 sizes—see below)

SPIN PROOF STABILITY ASSURED BY:

1—Wing tips remain level due to new tip ribs which never reach the stalling angle.

2—"T" section tail—44% more efficient—High stabilizer eliminates "blanketing" of rudder and loss of control.

3—High thrust line—Ship climbs with plenty of flying speed—When engine stops there is no sharp dive to regain flying speed—Many other ships lose 20% or more of their climb in these initial dives.

Ideal for Radio-Control or endurance.

SUPER-SENIOR $14.50

Plus 60c postage

4½" Airwheels $1.75 add. Span 10 ft. Length 85". Wing area 12 sq. ft. Weight 6 lbs. Use any ⅛ to ¼ H.P. Engine.

MONOWHEEL landing gear optional on Senior and Super-Senior. Engines may be upright or inverted.

The high-power small model you've been waiting for.

JUNIOR $5.95

Plus 25c Postage

3½" Airwheels $1.50 add. Span 5 ft. Length 44". Wing area 557 sq. in. Weight 2 lbs. Use any engine up to ⅓ H.P.

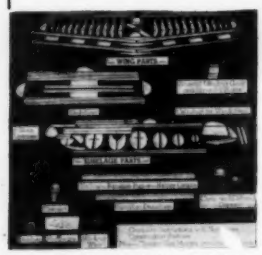
SENIOR $6.95

Plus 35c Postage

3½" Airwheels $1.50 add. Span 7 ft. Length 55". Wing area 795 sq. in. Weight 3 lbs. Use any ⅓ to ½ H.P. Engine.

West of Rockies and Foreign—Double the postage on each model.

CUSHION-CONSTRUCTION makes all landings smooth practically eliminates "crackup" rebuilding (another reason for doubling your flying). 1—Wing and Stabilizer removable—Free swinging, fully protected from all damage. 2—Batteries in wing—Cushioned with rubber—easy to get to. 3—Balsa nose cushions head-on impacts. 4—1/8 diameter music wire landing gear—bolted to plywood plate. 5—Engine mounted on "breakaways"—Protects engine and ship—quickly and easily replaceable. 6—Hardwood rails distribute stresses of landing gear, engine and wing.



Senior Kit Shown—Junior and Supe Senior Kits Are Similar

THESE ARE KORFF K—D KITS

(KNOCKDOWN) Cut Your Building Time In Half

All parts are cut to size and shape (no printed parts to labor over). Just lay on easy-to-understand full size drawings and cement together. Simplified for the beginner. A time-saver for the experienced.

OTHER OUTSTANDING FEATURES

"Warp-eliminators" in wing and stabilizer—put on as much dope as you like.
"Backbone" construction simplifies building, cuts weight, saves time.
Elliptical planform wing.—Specially developed airfoil that is inherently stable, has low drag and high lift, an ideal soaring section.
Elliptical section fuselage—has lowest possible drag at all angles.
All models have light wing loadings—approximately 8 oz. per sq. ft.
Each model has been thoroughly tested for months before being released for production. Dihedral, incidence, line of thrust, center of gravity location, stabilizer setting, etc., accurately determined and shown on drawings for your convenience. You don't have to experiment with a KORFF model.

BUY A MODEL DESIGNED BY AN AERONAUTICAL ENGINEER

Gas Models and Supplies Exclusively. Prices and Specifications Subject to Change Without Notice.

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Streamlined

BALSA WHEELS

Improve the looks of your planes with these keen looking, *true-centered* wheels that closely resemble the ones used on today's modern airliners. They are made out of high quality balsa, and are smooth as a duck's back.

¾"	3c	2"	9c
1"	4c	2½"	16c
1½"	6c	3"	18c

Add 5c for postage and packing

We have a full range of sizes for all types of models.

FREE CATALOGS

Send name, address and 3-cent stamp for your FREE copies of our three 1939 catalogs of gasoline and rubber model supplies, and model kits—complete with pictures and prices.

COUNTRY CLUB *Aero* SUPPLY CO.

3329½ TROOST KANSAS CITY, MO.

Mr. Bob Roberts of 4490 Broadway, Gary, Indiana, wishes us to announce the "Little Nationals," a gas model consistency event sponsored and conducted by Bram's Community Service Stores. The contest is sanctioned by the N.A.A. and will be held in Gary on Sunday, June 18th, from 9 A.M. to 6 P.M. Mr. Roberts, in his notice, fails to state the exact locale of the meet. There is an imposing prize list. Those who wish to enter this contest should write Mr. Roberts at the above address. A rubber powered contest will be held on Saturday, June 17th.

Bernard Gokey of 101 North Main Street, Bowling Green, Ohio, writes that the Bowling Green Model Airplane Club will hold its contest on June 11th instead of June 18th, so as not to conflict with the Gary, Indiana, meet.

Fire! Fire!

Here we have another word from Peter Bowers. It appears that recently Peter was burned "out"—not "up." Unfortunately in a fire which destroyed his home he lost a large batch of correspondence which had been from readers of MODEL AIRPLANE NEWS. Consequently he does not know their addresses, and is now wondering if those who have written him will write again so that he will be able to contact them in the future.

Correspondents

Walter E. Bailey of Lexington, New York, would appreciate it if other gas model fans would write to him.

The German Devil Gull

(Continued from page 21)

edge. In the center section it is built up of chrome-molybdenum steel sheet and in the outboard sections (from the landing gear struts to the wing-tips) it is composed of riveted "Duralplat," the German equivalent of our Alclad material of high aluminum content.

The wing is joined to the center section by conventional flange couplings and the metal covering of the entire surface is of sheet Duralplat. The ailerons are also built up on a small tubular spar, their leading edges being metal covered, the rear portion fabric covered. They are aerodynamically and statically balanced and are provided with trimming tabs. The landing flaps are hinged to both the center section (inboard of the landing gear) and outboard panels and are hydraulically operated.

The fuselage is built up on a semi-monocoque principle utilizing Duralplat throughout. In the nose is the huge Junkers "Jumo" 205c petrol liquid-cooled geared engine of twelve-cylinder inverted Vee design and develops 600 horsepower at eight thousand feet. Although the prototype machine, the D-IUXU, was fitted with the larger "Jumo" model 210c of 680 horsepower, the smaller model has been installed for training purposes. As a hi-speed fighter and dive-bomber larger and more powerful engines, including the mighty Daimler-Benz one-thousand-horsepower model, may be installed. This drives a three-bladed all-metal adjustable pitch V.D.M. propeller encased in a generous metal nose spinner. The nose is well streamlined with a minimum of exhaust piping projecting from opposite sides of the cowling just at the centerline. One excrescence mars the perfect streamlining, that of the ethylene-glycol cooling radiator mounted just under the fuselage at the intersection of the wings.

A long boiling overflow pipe is mounted against the forward face of this streamlined radiator. Machine-gun louvres are scooped out of the top of the fuselage just forward of the pilot, who is situated in a tiny open cockpit mounted high in the center portion of the fuselage. Entrance and egress is aided by small hinging side panels. He is protected from the airstream by a small glass windshield. A high, narrow headrest on the fuselage behind the pit relaxes him. From the pit rearwards the fuselage assumes a definite rectangular section with blunt, flat sides and rounded top and bottom. It tapers into a veritable knife-edge at the elevator post.

The fin and horizontal stabilizer are built up on small tubular spars of duraluminum with metal ribs. The former is metal covered, the latter largely fabric and adjustable from the ground. Thus varying loads must be compensated for at the discretion and experience of the pilot before taking off. The rudder and elevators are similiar to the ailerons in that they are metal covered at the leading edge and fabric covered rearwards. All tail surfaces are cantilever throughout with the vertical surfaces exhibiting a flagrant lack of symmetry. The rudder

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All the world loves a lover and all the world loves a winner . . . that is why PARAMOUNT rubber and gas power models are fast gaining in popularity. They are the last word in design and performance . . . the reason is simple. They are created by men who know aviation as a model hobby and as a profession.

Kestrel, 50" Wing Span $2.95

Each Kit Contains

- Precision-cut balsa strips . . .
- Finest quality balsa printed sheets . . .
- Large sheets grade A tissue . . .
- Semi-finished balsa cowling . . .
- Liberal supply of cement & dope (choice of color) . . .
- Steel spring wire . . .
- Balsa blocks cut to size . . .
- Full sized simplified plans & instructions packed in a beautiful, sturdy box . . .

Skipper, 50" Wing Span $2.95

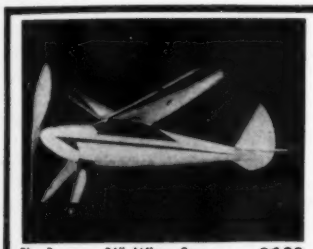
Money Back Guarantee

PARAMOUNT defies anyone to say that their models are not well worth more than the price asked . . . that they are not prize winners. PARAMOUNT is so positive that you will be delighted with your Paramount purchase, that they guarantee entire satisfaction or your money refunded on any purchase.

COMMANDER 6 Foot Wingspan $5.50

How to Order

If your dealer cannot supply you, we will gladly fill your order by mail. Send post office money order. If you send cash, be sure to have it registered. We pay all delivery charges. NO C.O.D.'s. Do not hesitate to order. Our money back guarantee protects you against risk.



Sky Ranger, 36" Wing Span RUBBER POWERED $1.00

CLUBS and DEALERS!

Here are outstanding rubber powered and gas models at bargain prices. All precision made and prize competing fliers. Complete Kits that will delight you. Everything included. Order now or write for special bulletin.

PARAMOUNT MODEL AIRPLANES

KITS—SUPPLIES

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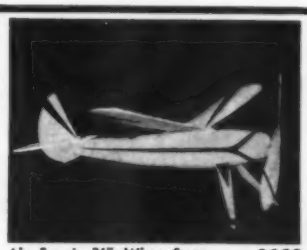

Air Scout, 36" Wing Span RUBBER POWERED $1.00

proper is high and pointed and is met by the vertical fin only about three-quarters upwards of its length. A unique balancing method has been applied to the elevators in that the leading edge setoffs are warped to maintain progressive aerodynamic balance at any angle. The trimming tabs on the elevators are controllable from the pit for minor load compensations should the pilot's pre-take-off analysis of the ship's condition err.

The landing gear is simple and strong, each wheel being mounted between two sturdy vertical pneumatic shock-absorbers. A spacious streamlined housing is slung around the entire assembly the forward portion of which is detachable for wheel or tire inspection or repair. The tail wheel is fixed and full swiveling but can be locked in position from the pit.

The Hamburg Ha. 137 is amazingly heavily armed, being fitted with twin Krupp-Spandau fifty caliber electrically controlled machine-guns mounted to fire through the propeller and controlled from the pilot's seat. In addition, two heavy Oerlikon model "FF" twenty millimeter cannons are mounted in each wing cell just over the landing gear and firing through large circular openings outside the propeller arc. This venomous armament is augmented by bomb racks capable of handling either ten 10-kg. or four 50-kg. fragmentation bombs.

The pilot is equipped with an adjustable seat, full flight and engine instruments and complete sending and receiving radio equipment. This latter utilizes the most outstanding characteristic of the Hamburg Ha. 137 in that its antenna is slung between the fin and two vertical masts mounted just beyond the wing tips. These are quite high and strong and it is claimed that this method eliminates to a large extent the static-gathering properties of the wing structure and the hollow tubular spar. The starboard mast in addition serves as a bearer for the air-speed Pilot tube at its top.

Empty the Hamburg Ha. 137 weighs 3,993 pounds and 5,313 pounds fully loaded with pilot, ammunition, military equipment and fuel. This last, oddly enough, is carried entirely within the tubular wing spar! The ship has a wing-span of 36' 7" and a length of 31'. It stands 13' 1" high and has a wing area of 252.8 square feet.

Due to its various purposes, duties and service categories it is difficult to quote accurate performance figures. However, the prototype hi-speed fighter design powered with the model 210c Junkers engine of 680 horsepower had an officially recorded top speed of 205 miles per hour and a cruising speed of 180 miles per hour at two thousand meters (6,560 feet). It showed a climb to that altitude in exactly four minutes, or about 1640 feet per minute initial climb. It climbs to four thousand meters (13,120 feet) in nine minutes, or only 1460 feet per minute. It has a service ceiling of 22,960 feet and a range of 360 miles, which, at cruising speed, means a duration of about two hours.

As this model was produced in 1937

THE NEW MERCURY GAS MODEL BY SCIENTIFIC

See Page 39

The New CONSTRUCT-A-PLANE Co.

SUPERIORITY! *What Does It Mean?*

IT MEANS Modern Design, Completeness, Detail, Simplicity, Honest Value

There's your definition and every kit bearing the name of CONSTRUCT-A-PLANE is a live example of that definition. That is why these kits are fast spreading throughout the world. And that is why no progressive member of the trade can overlook them. It pays to stock the kits that will be in constant demand.

● 10c Flyers 18" Span	● 10c Solids 7/8" Span	● 25c Flyers 25" Span
Spirit of St. Louis	Taylor Cub	Bellanca Junior
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Hawk "75"	Seversky Executive "Time Flies"	Taylor Craft
Seversky Executive	Lockheed Electra	Hawk "75"
Taylor Cub	Boeing F4B4	
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MORE POWER

NEW Atwood PHANTOM MODEL "G"

No Increase in Price

PACKED WITH 10 NEW FEATURES

Bill Atwood announces his new 1/7 H.P. Phantom Model "G" which incorporates TEN OUTSTANDING ADVANCEMENTS . . . AND NEW, GREATER PERFORMANCE. Model "G" produces this new efficiency with an unbelievable S-M-O-O-T-H-N-E-S-S of operation. It is also far easier to start and runs degrees cooler.

1. Model "G's" increased power is achieved by a new development in port timing, insuring faultless 2-cycle operation up to 14,000 r.p.m.
2. New single piece, fully counterbalanced shaft with tubular pin.
3. New diamond-bored crankcase which guarantees absolute alignment.
4. Streamlined manifold producing a new and distinct "crack" to exhaust.
5. New 4-bolt cylinder mounting which eliminates distortion.
6. 7½-oz. complete with 2 pen light cells.
7. Exclusive Dowmetal case.
8. Hardened steel timing cam.
9. Oversize bronze bearings as large as engines twice Phantom size.
10. Runs upright or inverted.

New precision, fully counterbalanced shaft, with rotary valve integral, incorporates the new, exclusive Faucet Pulsation Principle of port timing.

And remember all Phantoms are the biggest engines in their class, displacing .27 cu. in. under N.A.A. rules for engines up to .30 cu. in. displacement.

Send for new folder giving specifications and complete installation drawings.

$9.75 complete as shown

MEET MISS TINY

Get this record-breaking kit for your Phantom. 46" span. Kit contains EVERYTHING.

M6

PHANTOM MOTORS, 800 East Gage Ave., Los Angeles, Calif.
Please rush prepaid the items checked below:

☐ New Model "G" Phantom Engine complete with coil, tank and condenser..... $ 9.75
☐ Special 11" hardwood propeller..... $ .49 ☐ Miss Tiny Kit..... 3.95
☐ Phantom "G" Engine and Miss Tiny Kit with Propeller included as gift..... 13.70

Add 3% for Sales Tax if delivery point is in California.

NAME..... ADDRESS.....

later and more advanced designs have superseded it in German rearmament procurement competition and its initial classification as a hi-speed fighter has since been relinquished to the later and faster Messerschmidtt BF-109 (MODEL AIRPLANE NEWS, November, 1938) and Heinkel (MODEL AIRPLANE NEWS, February, 1938) fighters. At present it is serving duty as an advanced trainer and in emergency will be pressed into duty as a dive-bomber due to the factors of its great strength (attributed to its tubular spar design) and its vast armament. It is not definitely known whether or not large numbers have been constructed for the Third Reich and it is generally believed that only the prototype ship was completed. However, in view of Germany's bulging armament construction program and the latest received reports that she has no less than 16,000 fighting planes on hand, it appears likely that a good number of these are Hamburg Ha. 137 gull-wing fighters!

(Continued on page 64)

Home Of The Test Pilot

(Continued from page 7)

"purpose of the development of aviation," and christened it Wright Field. Today it stands as the greatest experimental flying field in the world. It has become a great reservoir of data pertaining to scientific aviation.

Officially it is the Materiel Division of the U. S. Army Air Corps. In order to understand its operations more easily it is necessary to explain the three major functions of the air corps, which is one of the most important branches of the U. S. Army.

First comes the actual *training* of the personnel whose job it is to fly the planes for Uncle Sam. Second is the *operation* of the air corps units, and from the ranks of the trained pilots come groups such as Pursuit, Bombardment, Observation and Attack to fulfill the tactical functions essential to the operation of an army's air corps under all conditions of peace and war. Last, of course, is the *engineering* and *supply* section which supplies all equipment and material necessary for the maintenance and operation of the various units which make up the U. S. Army Air Corps.

This is the special function of the Materiel Division at Wright Field. The word "Materiel" includes every object, raw material and part—from a complete flying field to the smallest bolt or strip of fabric; from a compete airplane to a pair of goggles—connected in any way with the operation of army aircraft.

The purpose of the Materiel Division is to have in readiness for immediate production and service the most advanced types of aircraft engines, armament and other equipment relative to aeronautics for the defense of the nation.

In addition to the experimental and development work which is carried on at Wright Field, the Materiel Division must exercise the procurement of necessary aircraft, materials and equipment for use by the air corps units. It must also take charge of the production, maintenance, storage,

disposal and salvage of this equipment.

To aid in this procedure eight main supply depots have been established in various sections of the country—at Fairfield, Ohio; Middletown, Pa.; San Antonio, Texas; Belleville, Ill.; Coronado, Calif.; Panama, Hawaii and the Philippine Islands. They are all under the jurisdiction of the Materiels Division and it is their duty to keep all air corps stations and fields throughout the U. S. and foreign possessions equipped for flying at all times.

It is also important that the Materiel Division keep in constant contact with the various industrial leaders and organizations throughout the land in order that the Government may keep informed as to the capacity of their plants and the amount of expansion each would be capable of in case of an emergency. This work in peacetime is of great importance in the scheme of national preparedness.

To carry out these activities the Materiel Division is divided into several main sections—the Procurement Section, Field Service Section, and the Industrial War Plans Section. In turn each of these departments is split into four different branches—the Aircraft Branch, the Power Plant Branch, the Equipment Branch and the Armament Branch. Each of these divisions has its own operations to perform and all are necessary to the successful experimentation carried on here.

More than ten million dollars has been spent to obtain the most efficient laboratories and testing devices in the world to carry on the work at Wright Field. In these laboratories expert engineers labor over draftsmens' boards in an effort to design super planes for Uncle Sam's Air Armada. The pencil pushing which goes on here has resulted in many of the planes which today are considered the best fighters, bombers and pursuit aircraft in the world.

It is interesting to follow a plane through its various stages from the time it is born on paper in the engineering laboratories at Wright Field until it is finally accepted for service in the U. S. Army Air Corps. Engineers in this branch furnish the design, specification and qualifications desired in the new airplanes to various manufacturers throughout the country. These in turn submit to Wright Field tentative designs for the new plane, fully explained by drawings and descriptions. The designs are supplemented by a wind tunnel model, which is tested in wind tunnels at the field to insure, before the plane is built, proper flying qualities in the full-sized plane.

The wind tunnel laboratory contains two wind tunnels, one fourteen inches in diameter and the other five feet. The smaller one is used for testing small airfoils or propellers; the latter for complete airplane models.

When these models are suspended in the tunnel and the wind sent through at a definite rate of speed, the air passing the airplane has the same effect on the lifting surfaces as if the airplane were moving at that speed through the air. Only the process is reversed. If the performance of the small airplane, as recorded by highly sensitive precision instruments, is unsatisfactory in the wind tunnel stream, the design is changed until satisfactory performance is

MIGHTY MIDGET

GASOLINE ENGINE

ONLY $9.50

POSTPAID

Complete, Ready to Run. Including a Tru-Pitch Prop., oil, instructive manual and double guarantee.

SPECIFICATIONS: All Engines full 1/5 h.p. 8500 r.p.m.; Bore 7/8", Stroke 13/16"; Bare Weight 6½ oz. Complete, ready to run, with coil, condenser, fuel tank, Champion spark plug, etc.

OTHER BUNCH MOTORS

MIGHTY-MIDGET Upright Kit	$ 7.95
MIGHTY-MIDGET Inverted Assembled	9.75
MIGHTY-MIDGET Inverted Kit	7.85
GWIN-AERO Upright Assembled	12.00
GWIN-AERO Upright Kit	9.85
GWIN-AERO Inverted Assembled	12.50
GWIN-AERO Inverted Kit	9.85
MIGHTY MARINE Assembled	12.50
MIGHTY MARINE Kit	10.85

All prices are postpaid

MODEL "D"

New 1939 Brown Jr. Engines

More value for your money! Precision-made in the world's largest and most completely equipped plant devoted to the manufacture of gas model motors. The 1939 Model D includes the sound engineering advances used in other Brown Junior Motors. New and improved timer! New Chrome Molybdenum Crankshaft! New Micrometer Needle Valve! New transparent gas tank! Motor shipped ready-to-run, complete with coil and condenser.... $12.50 P.P.

10 DAY TRIAL Order your Brown Jr. now. If within 10 days it fails to give complete satisfaction return it immediately and the full retail price will be refunded to you.

ALL MOTORS INCLUDE SPARK PLUG, COIL, CONDENSER, FACTORY BLOCK TESTED AND SCIENTIFIC DOUBLE GUARANTEE. BORE, 7/8"; STROKE, 1"; WEIGHT (BARE), 6½ OZS.

"B" The last word in precision-made gasoline engines for model planes. Special steel cylinder and piston individually fitted make the Model B truly a precision built job. Transparent, unbreakable fuel tank. Cadmium plated. Mounted on skids ready for operation. $21.50 P.P.

"C" Identical in every respect to the model "B" except for aluminum piston and special rings. The new timer in this and other 1939 Brown Motors gives positive contact at the points and may be rotated from 180 degrees to 360 degrees to get it in any position. $18.50 P.P.

"M" The latest power unit for model cars and marine use. Includes Aluminum piston and special rings, combination flywheel and cam washer for high speeds on open type high speed hulls. $16.50 P.P.

HUSKY JUNIOR

5/8" bore, 5/8" stroke, complete weight 6½ ozs. Complete with coil, propeller, oil and double guarantee, postpaid. $12.50

BRAT ENGINE

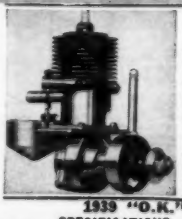
Bore 9/16", Stroke 5/8", Height 3¼". Weight 3½ oz., complete with coil, condenser, plug, propeller, instructions, can of oil.

Price $16.50 Postpaid

HI-SPEED ENGINE

1/7 H.P.—6,500 R.P.M. Bare Weight 3½ oz.

ONLY $12.75 Postpaid including propeller



Forster Bros.

Bore 1-1/16", stroke 1¼", ½ H.P., 2 piston rings, wt. 14 oz.

Model "B", Air cooled. Bronze bearing.....$17.75
With Ball Bearing..$19.80
Model C Water Cooled. Bronze Bearing.....$17.75
The same with Ball Bearing $19.80
Prices are postpaid for complete motor including propeller, oil and double guarantee (no prop. with water cooled motors) Flywheels $1.95

1939 "O.K." MOTORS

SPECIFICATIONS	Prices
Bore, .900"; stroke, .31/32"; R.P.M., 10,000; H.P., 1/5 plus; Weight, bare, 7¾ oz.; Height, incl. plug, 4 11/16"; Displacement, .618-10 c.c. Factory tested and guaranteed.	Special, $11.80 Standard, 17.80 DeLuxe, 21.00 Marine-D, 12.50 Marine-S, 13.30

All motors complete with coil, condenser, etc., ready to run.

ELF ENGINE

Bore 0.545", Stroke 19/32", Weight of bare engine 4 oz. Engine sold complete including coil, condenser, fuel tank, propeller. $21.50 Postpaid

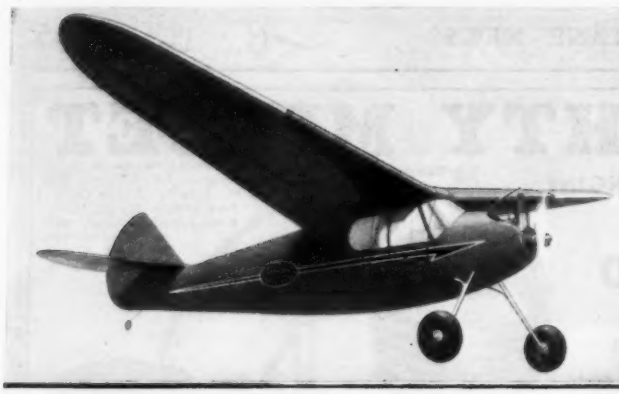
SCIENTIFIC

MODEL AIRPLANE COMPANY

"GAS MODEL HEADQUARTERS"

218-220 MA-6 MARKET ST., NEWARK, N. J.

In France: E. Kruger & Co., 9 Rue St., Sebastien, Paris
In England: Model Supply Stores, 4 Stewart St., Deansgate, Manchester
In South Africa: Yardley's 33, 'Kerk St., Johannesburg
In Finland: O/Y Wiklund, A/B, Turku, Abo



"COMMODORE"

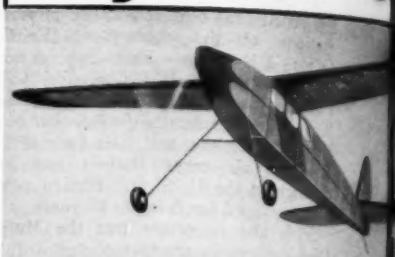
Wingspan .....6 feet
Overall length.....50"
Wing Area....5.2 sq. ft.
Total weight with motor and ignition mounts.....3½ lbs.
Airfoil section.....
.....Gottingen 549
Glide Ratio.....16 to 1
Rate of Clmb....Approx. 850 ft. per min.

Complete Kit Less Wheels **$6.95**

PRICES ARE POSTPAID

Complete Kit Including Pneumatic Wheels **$7.95** less motor

Buy The "S



50" WINGSPA

THE EAGLET

44" Wing—Length 32"

Truly the Finest Midget gas Job Offered to the Gas Model Builder Today.

Or At Your Dealer's.

$3.95 POST PAID less motor

33 Perry St., Belleville, N.J.

Gentlemen:

I am sending you a picture of my Eaglet gas model. This view shows it coming in for a landing with motor shut off.

The model sure was easy to build from the complete kit. Scientific is headquarters for all my models.

Very truly yours,
Allen Bedford.

RED ZEPHYR HOLDS CHAMPIONSHIP OF FRANCE

16 year old Raymond Levy of Paris, France, flew his Red Zephyr to a national record of 1 hour and 20 minutes, covering a distance of 25 miles.

6 FT. WINGSPAN

Complete Kit
With 3½" Pneumatic Rubber Wheels. $5.95 postpaid. less motor

ONLY **$4.95** Postpaid (Less Wheels and Motor)

GET THE THRILL

THEY LOOK, FLY AND

THE FLEA

FLIES 1 MILE (5280 ft.)

Wing ..... 30"
Length ..... 32"
Weight ..... 4 oz.

This new type of model airplane developed by Scientific will give you all the thrills and excitement of building a real gas job. Thousands of builders have constructed these remarkable models and gotten truly exceptional flights. Build one yourself now and experience the fun you, too, can have with a fine flyer!

The Flea kit is absolutely complete, containing balsa parts cut to size, dummy gas engine and spark plug, ball bearing washer, motor horn ratchet device, insignia, rubber, metal parts, liquids, full size plans with explicit instruction. Complete, including a pair of M & M wheels ..... **$1.95** Postpaid

MISS AMERICA

Gas Type—Rubber Powered Model Airplane

40" Wingspan **Length 27½"**
Weight 4½ ozs. **Flies 1 MILE (5280 feet)**

This is an exact replica of the full size Miss America gas model. Recently a Miss America gas model flew for 46 minutes on a motor run of only 37 seconds, breaking all world's records for so short a motor run.

This new small Gas Type Model has all the features of the large model. It is a real contest flyer and capable of outflying anything in its class. It takes off from the ground within 4 feet and heads straight up, climbing at an unbelievably high rate without the slightest bit of stalling. Can easily be built by a modeler with little or no past experience. On test flights it passed every qualification of the rigid Scientific standards. Contents of Kit 100% complete (similar to parts in Firefly and Flea).

PRICE

"FIREFLY"

FLIES 1 MILE (5280 FEE

The "Firefly" is the best thing to a genu... advance clean design and beauty will startle ... your own gas type model that will soar majest... and gracefully as an airliner under expert ... Dummy motor, propeller, full size plans, and a ... & M pneumatic rubber wheels.

SCIENTIFIC GAS MODEL SUPPLIES

STAR GAS MODEL PROPS

9"-10"-11"-12"-13"-14"-15"-16". Every one true pitch, finely made, perfect balance.

ANY SIZE ONLY **49c** EACH

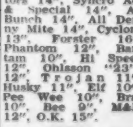
Postpaid or at your Dealer

DELUXE TRU-PITCH PROPELLERS

9"	$.60	13"	$.70
10"	.60	14"	.70
11"	.60	15"	.85
12"	.65	16"	1.00

WHAT SIZE PROPELLER DOES YOUR MOTOR REQUIRE?

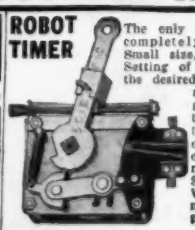
Ohlsson Gold Seal 14", All Brown Motors 14", Syncro Ace & Special 14", All Bunch 14", All Denny Mite 14", Cyclone 13", Forster 16", Phantom 12", Bantam 10", Hi Speed 12", Ohlsson "23", 12", Trojan 11", Husky 11", Elf 10", Pee Wee 10", Brat 10", Bee 9", M&M 12", O.K. 15".



PROP. SPINNER.....30

JACK & PLUG Each piece.....10c

ROBOT TIMER



The only timer that is completely automatic. Small size, only 1¼ oz. Setting of a knob gives the desired time. 100% accurate and guaranteed. See the new Scientific Robot timer at your dealer or order direct. Now only $2.50 postpaid. Without attachment. $1.95 postpaid.

SMITH

World's Finest Ignition Coil $2.50 postpaid

CHAMPION SPARK PLUGS

3/8", 1/4", each. .65c
Brown Jr. Plug.....65c
Hurlmann Plug 65c

FUNNEL With filter Screen Each 30c

SPRAY GUNS Small $ .89 Large $1.19

Speed Demon Race Car—you can power this car with any 1/5 H.P. gas engine. Order from Scientific today. Complete kit with pneumatic wheels $16.50 postpaid.

WORLD'S FINEST QUALITY FINISHES

Clear Dope, Colored Dope, Thinner, Cement, Heavy Cement, Bamboo Cement, Banana Oil

3 oz. bot.	$ .25
½ pt. can	.50
1 pt. can	.75
1 qt. can	1.40

SCIENTIFIC WHEELS

Absolutely pun-tureproof—leakproof. Per Pair $1.50 P.P.

TOGGLE SWITCH 39c

EXHAUST MANIFOLD

For Brown Jr. and Mighty Midget motors.

TAIL WHEEL

Shock absorbency gives knee action effect.

Made of highest-quality aluminum with donut rubber wheel. Weight less than 1 oz. For use on all gas models. Only 75c.

CYCLONE VALVES

Each.....$ .50

NOW ONLY $2.00 Postpaid

For All Motors NEEDLE VALVE AND BODY

Needle Valve.....50c
Body 50c

NEW MODEL YEAR BOOK—BY ZAIC

By Far The Best!

192 pages of priceless data and plans, over 100 detailed drawings of up-to-the-minute models. Every gas model fan should have a copy. Only $1.00 Postpaid

VALVOLINE OIL

Finest quality SAE 70 for all gas engines. Large bottle with instructions.....20c

BALSA WOOD 5 Ft. Lengths

1/32x1/2	$ .02
1/32x3/4	.04
1/16x1/2	.06
1/16x3/4	.06
1/16x1	.06
1/16x1½	.08
1/16x2	.08
3/16x1/2	.09
1/8x1/4	.06
1/8x3/8	.08
1/8x1/2	.10
1/4x1/2	.10
3/8x3/8	.10
1/2x1/2	.12
1/2x3/4	.15

3 ft. Sheet Balsa

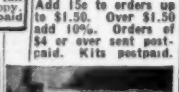
1/32x2	.10
1/32x3	.15
1/16x2	.12
1/16x3	.18
1/8x2	.15
1/8x3	.20
3/16x3	.18
3/16x3	.25
1/4x2	.20
1/4x3	.25
1/2x2	.25
1/2x3	.35

AUTHORIZED DISTRIBUTORS for M&M PNEUMATIC RUBBER WHEELS

1¼"	pr.	$ .50
1½"	pr.	.50
1¾"	pr.	.50
1¾"	pr.	.50
1¾"	pr.	.60
2"	pr.	.60
2½"	pr.	.60
2½"	pr.	.60
3"	pr.	1.50
3½"	pr.	2.75
4½"	pr.	2.75

ORDERING INSTRUCTIONS

Add 15c to orders up to $1.50. Over $1.50 add 10%. Orders of $4 or over sent postpaid. Kits postpaid.



NEW! SELF-STARTER $3.00 Postpaid

SCIENTIFIC MO

218-220 MA-6 Market Street

In England: Model Supply Stores, 17 Brassmore St., ...
In South Africa: Yardley's, 33, 'Kerk St., Johannesburg

"SCIENTIFIC" WAY!

"ORIOLE" CONTEST ENDURANCE MODEL

Flies 2 to 3 Miles: Overall Length 34"

So simple, even the beginner can complete the model in a day. This Model will clear the ground in a short take-off and climb with amazing speed. Every detail of the "Oriole" conforms with N. A. A. contest requirements.

Kit is 100% complete. Black and Orange color motif. All highest quality parts—strip balsa accurately cut to size; ribs, outlines, etc. clearly printed on sheet balsa, formed wire parts, 16" machine cut drilled balsa propeller, cement, rubber, colored tissue, ball bearing washer, spring steel landing gear wire, pair of streamlined wheels, liquids, full size plans with instructions.

THE BIGGEST KIT VALUE IN AMERICA TODAY!

INGSPAN ONLY **$1.00** POSTPAID OR AT YOUR DEALER

J-I-T-T-E-R-B-U-G ENDURANCE MODEL

25" Wingspan—Length 20½"—Light Weight

FLIES OVER 1 MILE (6,000 feet)

Here's another famous Flying Model originated and designed by Scientific. This trim endurance model can easily fly one mile or more. It speeds along the ground for a few feet, climbs into the sky—spirals up . . . and up . . . then gradually glides to a perfect 3-point landing! It is one of the slickest looking planes you will ever build! Look at that shapely wing—detachable, too!—that classy little cabin—streamlined nose—that graceful, thoroughbred appearance that simply spells "class" and long flights. The construction is so simple that anyone with little or no past experience can easily build the "Jitterbug" in a few hours. Guaranteed.

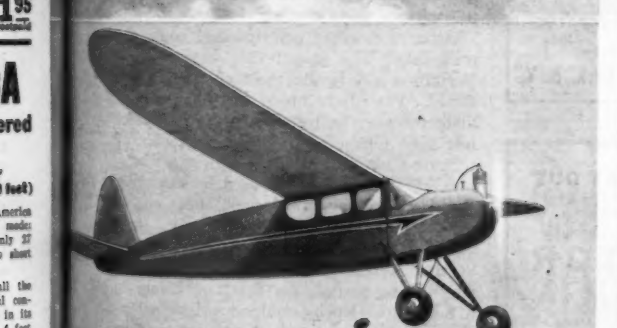
Kit is complete w th all materials including streamline wheels and a ready made propeller, full size plans and explicit instructions.

Priced exceptionally low. Complete kit. Only 50c

Postpaid or at your dealer

THRILLS OF GAS MODEL FLIGHT

FLY AND SOUND LIKE GAS MODELS



Including a pair of M & M pneumatic rubber wheels

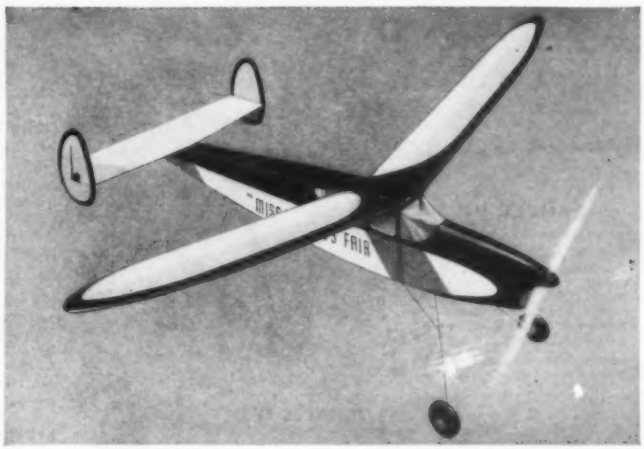
$1.95 Postpaid

SCIENTIFIC MODEL AIRPLANE CO.

"MODEL HEADQUARTERS" NEWARK, N. J.

In Finland: O-Y Wiklund, Turku, Abo
In Portugal: Ed Von Hafe, Rua Dr. Miguel Bombarda, 243, Porto

"MISS WORLD'S FAIR"



FLIES 3 MILES

50" WING SPAN
LENGTH 35½"
Weight 6 to 8 ozs.

$1.50 POSTPAID OR AT YOUR DEALER

Here's as keen a model as you'll ever see. Notice the snappy lines, the well-designed fuselage with slanted windshield and enclosed cabin, its rakish sweep back wing, the distinguishing shape of its inverted type nose with open radiator, and the graceful twin rudders that are characteristic of present-day speed transports.

And Boy! how she can fly! The model runs along the ground for about 5 feet—then as gracefully as a gull, its wing lifts the model gently into the air. It climbs rapidly and gains an altitude of several hundred feet in little time all the while spiraling in large circles the diameter of a city block.

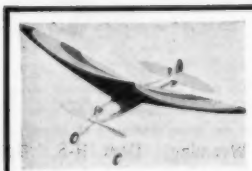
After the rubber motor is entirely unwound the model goes into a beautiful glide which can only be described as sensational. On one flight the model glided for over 2 miles, after which time it came in for a perfect 3 point landing.

If you're a beginner, you'll surprise yourself with the striking and unusual model you can build so easily from this complete kit. And if you're an expert, you'll find the "Miss World's Fair," a model that's worthy of your best efforts.

Here's the model that will make them sit up and take notice when you enter it in the next flying contest. ORDER YOUR KIT NOW.

KIT IS 100% COMPLETE with 15" machine cut balsa, center drilled propeller; ball bearing washer; all flat parts—ribs, bulkheads, etc., clearly printed on sheet balsa; tissue; formed wire parts; streamline wood wheels; liberal quantities of cement and paper adhesive; celluloid for windows; approximately 30 feet of finest quality brown contest rubber; washers; nose plug; celluloid, etc., etc.

In addition every kit contains a set of the clear, full size plans and detailed directions that have made so many friends for Scientific models among beginners and experts alike. A sensational buy at $1.50, postpaid. SEE IT AT YOUR DEALER.



VALKYRIE

Wingspan 24" Length 15" Flies ½ mile

GAS TYPE RUBBER POWERED MODEL

Designed by Indoor Expert Carl Goldberg in miniature duplicate of his prize winning original which won second place at the "National," Detroit, 1937. Can be easily constructed in 4 or 5 hours. HAS ALWAYS SOLD FOR $1.00.

NOW ONLY 50¢

Postpaid or at Your Dealer

14 min. 54 sec. on First Flight with 45" Lancer . . . Chicago model builder reports

LANCER "45" →
Length 32"; Span 45"
Weighs only 16 oz. ready to fly, due to the simplified monocoque construction used. This model has the greatest strength—weight ratio of any gas model. Complete kit with air wheels... **$2.95 pp**
With colored dopes and a finished prop..... **$3.50 pp**

the 6' LANCER
for the large bore motors, is being acclaimed by beginner as well as experts for its clean lines, ease of construction, strength and amazing flight performance. Complete kit includes aluminum cowling and streamlined air wheels only **$5.95 pp** With colored dopes and a finished prop..... **$6.95 pp**

THUNDER BIRD ← **"45"**
(For small bore motors)
The gas model that is easy to buy, build, handle and fly. Complete kit includes air wheels..... **$2.95 pp**
With colored dopes and finished prop..... **$3.50 pp**

SYNCRO ACE SPECIAL 1-5 HP MOTOR
Complete, ready to run, with coil, condenser, oil and 14" prop only **$9.95 pp**
OR **$7.50** and your old motor.
FREE CATALOG

NEW CYCLONE AIRCRAFT CO. (Dept. A 10) 166 Richards St., Brooklyn, N. Y.

As New as the New York World's Fair

AMACO PRESENTS THE GULL SPORTSTER

This fine kit contains:
Clearly stamped and neatly printed balsa wings, stabilizers, rudder, under slung and wing mounts. Ample amounts of cement, wire, rubber, extra pieces of our highest grade balsa and neat wheels.
Simple and easy to assemble with clearly printed instructions and plans. DEALERS WRITE

ONLY **20c** POSTPAID

Plans Drawn by Jesse Davidson
Wing Span 18" Length 13" Prop 8"
Guaranteed to fly over 1,000 feet

AMERICAN MODEL AIRPLANE CO., 347(m) E. 143 St., New York, N. Y.

***PERFORMANCE!* - - -DAY IN AND DAY OUT**
With the New, Improved

PEE-WEE MOTOR
More Power—More Speed—More Endurance

If you're fed up with disappointments,—slow starting,—mediocre performance,—you owe it to yourself to power your next plane with the new PEE-WEE motor. You'll be delighted with its quick starting, its steady surge of power, its ability to "take it" in the severest tests.

Fliers everywhere are acclaiming the Pee-Wee "The Best Little Motor of Them All." Made in Detroit, the Motor City. Height 3 ¼". Length 4". Bore 9/16". Stroke 9/16". Oilite oil cushioned bronze main bearing. Tool steel crankshaft. Transparent gas tank. 4600 R.P.M. with 10" prop.

Motor Assembled, Tested, and Guaranteed **$14.50** Postpaid

The PEE-WEE SPEEDSTER
A fine mate for the famous PEE-WEE Motor. Strong, stable in flight. Easy to-build. Wing span 54". Chord 6". Length over-all 28½". Weight ready to fly approx. 24 oz. Kit contains full size three view plan, printed ribs and body formers, selected Balsa strips, Basswood for motor mount, hookup wire, bamboo paper, 1 pint of dope, cement, wire for landing gear, airwheels, and 10" propeller, KIT COMPLETE, only..... **$3.75** (plus 35c postage)

Send for catalog showing our complete line of over fifty models. Everything you need in the way of model supplies. Our prices are right.

Dealers write for franchise information on your company stationery.

DALLAIRE MODEL AIRCRAFT CO., 9830 Wyoming, Dept. N-6, Detroit, Mich.

obtained. Thus a great saving in cost is brought about since the wind tunnel model costs about one per cent of the cost necessary to make the same changes on the real plane. A wind speed of 275 miles per hour can be obtained in the large tunnel.

Just as certain aerodynamic characteristics are learned in the wind tunnel, so is the strength of airplane structures learned by static or dynamic tests in another laboratory.

It is nothing uncommon to see—that is if you can get inside the closed doors, which seldom happens, but occasionally is allowed—a large wing with sand bags loaded upon it, or a landing gear lifted high off the floor and about ready to be dropped at a certain angle to a structure beneath.

Static testing of complete airplanes is carried out in order to check the calculated strength of the airplane, the "carrying through" of the various component parts, fittings and other details. The change of trend in airplane design has made the static test of both wings and fuselages a great necessity.

In the impact test (reason for landing gear being above floor) the height of the drop for the test is computed mathematically to give the same shock or jar to the assembly tested that it would actually receive from shock of impact with the ground in landing.

Aside from the actual flight tests which come along later the static test and the dynamic test are the most important ones which the airplanes are subjected to. In many cases "over-testing" is done to determine the actual breaking point of the various parts of the plane. This means that more strain than actual flying would ever bring upon the plane is used. Thus, naturally, the parts are going to weaken and break. This is invaluable, however, since it makes known the maximum strain which the various parts can stand.

After the wings and fuselage come the propellers. The prop testing equipment at Wright Field is the most efficient in the world. Propellers up to forty-five feet in diameter may be tested on the giant whirl test rig. One of the stands is capable of turning a blade at 4300 revolutions per minute. Electric motors are used for operating the propeller rig, the largest being one of 6,000 horsepower.

A new method of test has been developed at the Material Division which makes it possible to predict the point of failure in a new propeller by subjecting it to vibration of such frequency that a certain type of resonant vibration is excited. This is one of the most valuable contributions to aeronautics since the war.

In the above test sawdust is sprinkled on the blade previous to its vibratory movement and this dust accumulates at the spot in the blade which is the weakest. (The idea is easier explained by the accompanying photo.)

All of the propeller testing for the U. S. Navy is also carried on here at Wright Field.

Sometimes in the "Whirl Test" the propellers are run for hours at a time to test their endurance. The test rigs are out-of-doors and thus in most cases props are subjected to weather conditions which they would receive were they in actual operation

on an airplane.

The propeller testing laboratory is a large building surrounded by thick concrete walls and a ceiling of oak planking backed by a second ceiling of concrete. All of this is necessary because the blades are turned over at such revolutions that sometimes they are separated from the hub or break off at their weak points. Once the breaking off of a blade caused a memorable accident.

The blade, being run at a terrific rate of revolution, broke off from its hub, sliced completely through a six-inch steel "I" beam, crashed through the twelve-inch oak ceiling, then went on to crack the concrete which made up the secondary ceiling.

"All of which," explains one of the engineers, "is a splendid example of power that is power."

One of the noticeable characteristics about Wright Field is the constant hum and roar of motors. It seems there is never a moment that some splitting roar of combustion is not breaking the silence. Most of this is due to the fact that engines are being tested almost every day in the torque stands and the dynamometer laboratory. And since the engine is highly essential to the successful flight of an airplane, the work performed by the Power Plant Engineers is of great importance to the development of aviation.

The Dynamometer Laboratory, where the forces developed in high powered aircraft engines are computed and measured, is fitted with the latest types of dynamometers, water brakes, gauges and other intricate instruments for determining fuel consumption, scales for measuring oil consumption, revolution counters, tachometers for indicating and computing engine speed, and complete equipment for the performance testing of the aircraft engine and each of its units.

There are eleven large testing stands in the Power Plant Branch. Three of these are used to test the large air-colled and liquid-cooled and the others are used for testing the smaller motors.

One of the most interesting tests carried on in the Power Branch laboratory is that in the "cold room." Here both liquid and air cooled motors are tested for starting and operation characteristics at temperatures as low as fifty degrees below zero. Thus the effect of extreme cold which is encountered at high altitudes on fuels, lubricants, oil coolers, fuel systems and other materials is easily determined.

The work carried on in the Cold Room is extremely dangerous and engineers working here must take many precautions A telephone and signal system make communication with the outside possible. In case of inflammable vapor or carbon dioxide escaping into the air of the interior, an alarm system is worked out to warn engineers who are performing the experiment.

Not within the Power Branch laboratory, but a part of its operations are the mammoth torque stands which rise for forty feet into the sky. These torque stands make it possible to test the endurance of the various engines. Here engines are run for periods as long as 150 hours without stopping, to determine their endurance. Observation rooms, fully equipped with necessary test registering instruments, enable engineers to study the performance of the engine under the test.

Various types of fuels and their operation in the aircraft engine are tested in a special division of the motor testing lab. As a result of the work of this department the U. S. Army Air Corps today uses the highest quality of fuels in the world.

As a result of these various engine tests many improved features have been contributed to the advancement of aircraft engines by the engineers of the Power Plant Branch at Wright Field. Among one of the most noted was the substitution of Prestone for water as a collant in liquid-cooled engines, making possible the reduction of the size of the radiator by sixty per cent and granting a new lease of life to the water-cooled engine which was slowly losing its popularity.

Aside from the actual testing of the many parts of the airplane and of the plane as a whole, Wright Field has contributed many important developments to the auxiliary functions of aircraft. Most of this work, however, comes under the Equipment Branch. One of its outstanding achievements is the development of the aerial camera.

And today the value of aerial photography has proved to be unlimited. Its greatest application, however, is for mapping and surveying purposes. At one time it took several seasons to map a section of the U. S. Now with the aid of the aerial

Meet the New Champion

SCIENTIFIC..... *Announces the new* "MERCURY"

HIGH CLIMB GAS MODEL

SPECIFICATIONS: Wingspan 6 feet, overall length 52", total weight, with motor and ignition units: 2¾ lbs.

CLIMBS AT RATE OF 1,000 FEET PER MINUTE

THIS new Scientific Gas Model has many distinctive features that you would only expect to find in kits selling at much higher prices. The complete model is light, weighing only 2¾ pounds ready to fly, yet by applying regular aircraft construction it is as strong as ships weighing 4 to 5 pounds.

The flying qualities of this model are far in excess of anything you might expect. Its light weight puts it in the air with a very short run, even with the motor running at half speed. Its stability is amazing, recovering rapidly from any position in which a steep climb or gust of wind may put it. It glides in long and flat, hovering about six inches off the ground for 20 feet or more, then gradually settling to the ground in an easy, smooth, three point landing.

The "MERCURY" offers you the "tops" in gas models at a very low price.

KIT IS COMPLETE with all necessary materials including a pair of 3½ streamline balsa wheels; shaped prop. blank; all hardware parts; ignition wire; cement; white bamboo paper; giant full size plan with instructions, etc., etc.

$4.95 less motor POSTPAID, OR AT YOUR DEALER

DE LUXE KIT: Complete as above, plus the addition of yellow, blue, and gold Scientific Dope, and a pair of 3½" Pneumatic Rubber Wheels (in place of balsa wheels). A $10.00 value for only ..... $6.95 (less motor)

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MERCURY

Here's an actual picture story of the "Mercury's" test flight at Paterson, N. J., on March 3.

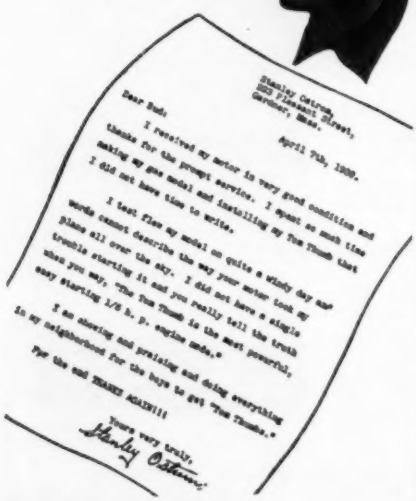
And the "Mercury's" off like a flash, after a short run, climbing at the amazing rate of over 1,000 feet a minute.

After 15 seconds, the motor shuts off, the model rapidly recovers from its steep climb, going into a beautiful long flat glide.

Now the "Mercury's" coming in perfectly poised for a 3-point landing. A perfect flight!

BUD WARREN Says:

"This letter tells what you want to know about the engine you buy."



Stanley Ostrom,
823 Pleasant Street,
Gardner, Mass.

April 7th, 1939.

Dear Bud,

I received my motor in very good condition and thanks for the prompt service. I spent so much time making my gas model and installing my Tom Thumb that I did not have time to write.

I test flew my model on quite a windy day and words cannot describe the way your motor took off planes all over the sky. I did not have a single trouble starting it and you really tell the truth when you say, "The Tom Thumb is the most powerful, easy starting 1/5 h. p. engine made."

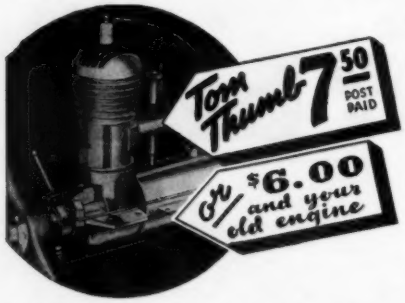
I am showing and praising and doing everything to my neighborhood for the boys to get "Tom Thumbs."

For the end THANKS AGAIN!!!

Yours very truly,
Stanley Ostrom

SPECIFICATIONS and HOW to BUY the NEW TOM THUMB

The Tom Thumb is the most powerful easy starting 1/5 H.P. engine made. Clip the coupon below, enclose money order for $7.50 (also your old motor for special $6.00 offer), and receive a *brand new* assembled and block tested Tom Thumb. Complete with fuel tank, coil, Champion spark plug, one piece cylinder and head and other modern features. Complete flying weight 10 oz. (less batteries). Bore 7/8"; Stroke 3/4".



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camera it can be done within several hours.

Highly sensitized films have been developed by the Photographic Department at Wright Field. Because of these developments it is possible to photograph details through haze or fog that are invisible to the naked eye. In addition, special equipment has been devised which makes it possible to develop negatives while the plane is still in the air. Because of their own ingenious inventions, air corps photographers have made photographs from the highest altitudes and greatest distances of any in the world.

Another phase of the experimentation is that concerning the development and improvement of aerial armaments. All of this work is carried out by the Armament Branch at Wright Field.

Instruments for the accurate dropping of bombs, taking into consideration the speed of the plane, its pitching and other movements, speed of the wind, and the trajectory of the fall of the bomb, have been developed here. Many other intricate mechanisms for the improvement of airplane armaments have also been developed by this branch of the Material Division.

The Air Corps Engineering School is also conducted here at Wright. The instruction taught here educates the officers of the air corps in the fundamental principles and practices of aeronautical engineering which are especially applied to the needs of the air corps. There are seldom more than fifteen to twenty students in the school at one time and only air corps officers are eligible for the course.

A technical library—one of the best fitted in the world—serves as an invaluable aid for the students. Every known aviation publication can be found on its shelves for the convenience of the engineers. The collection of documents is made even more valuable since the Material Division Technical Reports are contained among the files. These documents are probably the greatest source of technical data pertaining to aviation in the world.

In addition to the library, which serves as a great aid for reference work, there is also an aeronautical museum at the field. Inside this building are many exhibits featuring the progress of aviation. Some of them have great historical value but their real asset lies in the fact that engineers can study the many old models and articles and learn from actual work how to add the necessary improvements to the present-day planes and their necessities.

Probably better than any words might describe it—this museum tells the story of the U. S. Army Air Corps.

There are many other buildings, offices, supply buildings and laboratories which cover the seven hundred or more acres that make up the Wright Field reservation.

One must not forget, however, the planes themselves, which can be seen almost every day "on the line" in front of operations. Right now the most spectacular of these is the mammoth Boeing B-15 Bomber—Uncle Sam's Super Fortress. This is the greatest of all the army's planes. Only recently it has been accepted by the army after rigid tests at Wright Field.

However, back some distance from the operations office, in a carefully guarded experimental hanger—not so carefully guarded, however, that supposedly sealed lips did not betray its secret—is a large wheel undergoing dynamic tests.

This wheel supplied the spark which kindled the belief that the army was building a super-super plane. And now from the Douglas plant in San Amonica, Calif., press dispatches unofficially proclaim construction is underway on a giant bomber which will be even larger than the B-15 and powered with six engines!

Some time in the future that plane will land at Wright Field to undergo the tests which Uncle Sam prescribes for all his planes.

Meanwhile the eyes of the world are focused on its construction and completion. And above all, the test pilot is waiting anxiously for a crack at this new air giant.

Wright Field will be its first stop.

That's the home of the test pilot!

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LAWRENCE
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The ONLY smooth cut tru-pitch balsa propellers made!
The ORIGINAL balsa wood propeller, and still the best!

AVAILABLE IN SIZES FROM 3" TO 32" . . . ONE OR TWO PIECE PROPS
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MODELMAKER'S KNIFE 1/4 SIZE

This smart set of Modeler's Knife is a friend to the Boys making model boats and airplanes. Handy for fine artwork. The blades and saw fit to the same handle. The saw cuts Brass and Steel, all in a strong wooden box. A block of balsa wood suitable for making a boat or airplane follows with every order.

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After a year's designing, and a long winter of the severest kind of field testing, we now announce two spectacular new gas-powered models—the COMMANDER and the CADET—models that are destined to smash records right and left. Casting aside all tedious construction work by the introduction of an entirely new fuselage design, and the use of Megow's ready-carved LEADING EDGE, it is possible to produce one of these beautiful models in a few hours. The wings are the strongest ever designed, and are made still more indestructible by detachable mounting. Easy to transport. Realistic cabins.

CADET AND COMMANDER

Conical monocoupe construction of fuselage, expressly designed for quick, easy building. Ready-carved Leading Edges and strongest wing construction ever devised. Clark Y airfoil. Special mounting allows wings to fly off in collision, undamaged. High Aspect Ratio—higher efficiency, better glide and flying qualities. Extremely flat glide puts model into soaring attitude at the slightest favorable air current, and is ideal for landing. Specially designed tail for maximum climbing ability. Skin construction of fuselage permits easy installation of parts. Skid mounting takes any motor.

CADET

Wingspan 51½". Stabilizer span 18⅜" Wing area 276 sq. in. Uses any ⅝" bore motor. 2½" spec. rubber wheels. Price $3.95

Postage 20c extra

COMMANDER

Wingspan 6 ft. Stabilizer span 29⅜". Wing area 570 sq. in. Uses any ⅞" bore motor. 3½" spec. rubber wheels. Price $4.95

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PIPER CUB. Features the latest and best in construction ideas. Easy to handle and tra..sport. Practically crackup-proof. Features Megow's Ready-Carved Leading Edge. Scale spacing of struts and ribs in wings and fuselage. Uses any ⅝"motor. Wingspan 52¾". Less motor, $3.95 plus 20c postage.

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FLYING QUAKER. Span 7 ft. Weight with motor, 5 lbs. Kit contains 3 full-size plans, 28" x 34", cutout propeller blank, extra hard Balsa wood cut to proper sizes, special steel wire, sheet aluminum, celluloid, bamboo, paper, cement, dope and many other features. Less motor $5.95 plus 20c postage.

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36" x 18".....	.80	"	25c	"	"
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½ oz. bottle 5c 1 oz. bottle 10c

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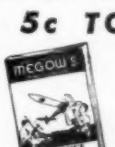

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Rubber-Powered

Latest type folding propeller increases glide by lowering parasitic drag. Also "free-wheeling" prop. details, furnished for the inexperienced builder. Design based on models flown in contests by two Megow designers and embodying latest developments. Wing streamlined into fuselage. Removable tail simplifies winding. Rubber Tensioner prevents shifting weight of unwinding rubber. Landing gear can be folded for carrying model in box. The combination airfoil used has been proved by years of experience. Wingspan 41". Wing Chord, 3⅜". Wing area, 147 sq. in. Aspect ratio, 12. Fuselage cross-section, 9.28 sq. in. Weight 4.23 oz. Price, $1.50 plus 15c postage.

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Sea Hornet— post paid **$11.50**

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High performance 57" gas models designed for upright or inverted Bunch 1/5 H. P. engines. Complete with all equipment to build and fly — pneumatic wheels, "Autoknip's" timer, finished prop, covering, cement, dope and all wood and metal parts shaped. The world's top quality gas airplanes.

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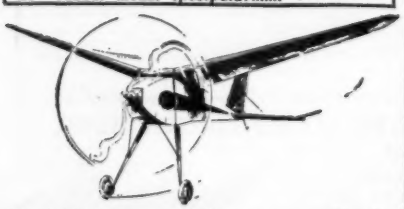

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Send 10c for new Bunch rubber model catalogue describing winning duration models.

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The Stout Outdoor Record Holder

(Continued from page 15)

that the fuselage will be true. The construction from here on can shift from one end to another to speed it up. Details are well covered in the plans. Especially note how the wing mount is made to be rigid without braces. This is done by use of pins and having the wing rubber mounting hooks abut longerons and airfoil shaped mount. Motor anchorage should be made and the landing gear mounted before stringers are applied. The landing gear might give a bit of trouble but this will be more of handwork nature than perplexity. Just be sure that the large face bushings are bent as shown, and slipped on the wire before any bends are made. Do not bend the axle portion until the model is covered since the silk has to be pierced and slipped over it. The easiest way is to cement the upper bushing first, let it set well and then press the wire against the upright with the extra upright.

The stringers are exceptionally large because they have to provide an eight-sided fuselage for streamlining and the needed cross section. They are shaped to dimensions before being cemented in place. With longerons in place, the front portion can be rounded with very "mushy" balsa blocks. This is standard "Henry Struck" construction and it is much superior to balsa sheet. (Sheet was used at the beginning but blocks have been substituted since.) The fuselage is now ready to be covered with silk.

The whole secret of successful silk covering is to wet it before applying. This was discovered by Paul Plecan. Cut silk to an approximate size which would cover the entire fuselage. Spring the landing gear together and determine the two small holes. Now follow this routine:

Soak the silk well. Coat the bottom stringer with cement. Slip silk through the wires and center it on the stringer, holding it in place with pins. The cement will dry even though the silk is wet, so don't worry. It will "blush" of course but dope will cover it up. After you are sure that the cement is set, coat the longerons marked "W" and pull the silk up evenly on both sides. As you tighten the silk hold it in place with pins on stringers "X." Do not use pins on longerous. Continue this process for stringers "X" and longerons "Y." Be sure that silk is kept wet. A bit of trouble might be experienced at the top, but if the silk is well set on other points, you can let it dry and then rewet the upper portion and cement one edge at a time. Just be careful not to twist the fuselage in the process. This is the only worry. A very good curve is obtained right behind the wing if the silk is cemented to the bamboo braces and the dihedral angle of the mount. If the job is well carried out, the silk will tighten all over when the moisture evaporates. In fact, if you have slack, better take it out as dope just won't.

When the silk is dry, apply a coat of clear, full strength dope. Then two thinned coats of yellow dope. The original had a red trimming line which was done with the aid of Scotch masking tape, using the center stringers as base line. The 1/16" square balsa curve is cemented on the silk, and when set the silk can be trimmed. The final job is to cement the windshield in place. It is advisable to make a paper pattern first. Note how "D" edges are made to overlap the leading edge of the wing and so provide a very smooth continuation for the airstream. The celluloid is cemented to the ring, over the wire hooks and to the dihedral angle of the mount. The side celluloid is then cemented in place. Note how it overlaps the longerons, uprights and the airfoil shaped mount. This provides extra strength. The fuselage is finished by cutting the silk on three sides of the motor hatch, leaving the remaining side to act as a hinge. Might mention that the stabilizer mount is cemented in place before covering so that the silk can be worked into a round fillet.

The Wing

The wing has a very high Strength-Weight ratio, which is due to the deep and hard center spar; using quarter-grained and capped ribs and covering top and bottom of the leading edge with balsa sheets. There is a definite procedure in making the wing.

The rib template is made by pin pointing through the drawing on a stiff paper

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Rubber Powered—32" Wingspan

The "BUCCANEER"

$1.00 p.p.

WITH BALL BEARING PROP SHAFT
Balsa Covered Wing — "Semi-Planked" Fuselage Wire "Gas Model Type" Landing Gear

No airplane in the history of model building has established such a long line of records equal to that of the "BUCCANEER" Gas Models, holder of both the Senior and Open World's Record under both limited fuel allowance and limited engine run rules. In response to your demands we give you the rubber powered "Buccaneer." Designed for a 4-cylinder Menasco engine to give scale model appearance.

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The CAVALIER "60"

60-Inch Wingspan—For 1/7 h. p. Motors. Monocoque Construction

Here is a ship that brings a new thrill to the small gas model class. It glides like the "Custom Cavalier" and climbs like a bullet. Lowest-price model ever offered with exclusive Monocoque construction. Install your Ohlsson or Hi-Speed in it and watch real action ..... $4.95 p.p.

NEW!! The "CAVALIER"

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Ball Bearing Prop Shaft.
M & M Wheels
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The aristocrat of model airplanes for the first time in rubber power. Employs famous Berkeley Gas Model construction making it practically crash-proof.

Kit includes everything to build the model as pictured. All balsa parts are printed out: semi-finished nose block; liberal quantities of cement and dope; and full-size easy-to-follow plans.

$5.00 p. p.

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51½-Foot WINGSPAN. FOR ⅛ h.p. motor. Limited engine run champion and Senior N.A.A. Record Holder. Everything you desire in a gas model. Beautiful lines, snappy performance, and priced with the lowest mass production kits.

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The sweep back gull wing sport model that is the favorite for inverted motors.

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9 ft. Wingspan. Simplified MONOCOQUE CONSTRUCTION for 1/6 to 1/3 h. p.

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The engine that powered the "Buccaneer-48" to the Small-Bore Championship. Easy starting and gives nearly two lbs. static thrust.

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2½" dia.	$1.25 Pr. P.P.	2½" dia.	$ .90 Pr. P.P.
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Now you can install a "Stop-Watch" Timer in your lightest gas model at no increase in price. New dural timer weighs only 1½ oz. Adjustable with split-second accuracy up to 55 seconds.

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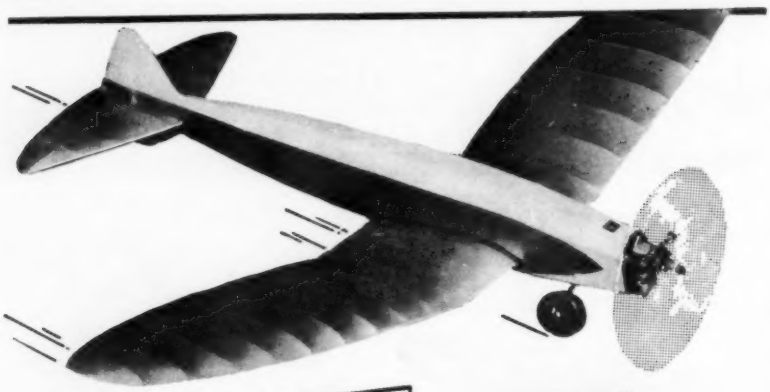

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TO THE WINNER OF THE NATIONALS WHO FLIES A HIGH-SPEED POWERED STARLINER $100 CASH

THE NEW
MERCURY
GAS MODEL BY SCIENTIFIC
See Page 39

● NEW ADDRESS ●

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Satisfied customers have made this possible. Don't let pseudo-advertising sell you merchandise of inferior quality. The name MIDWEST is your insurance of highest quality at lowest possible prices. Compare our prices and test our quality.

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Science's latest contribution to the Gas Model Builders. Tests reveal a 5/16" spark with a Burgess battery. Bakelite Case . . . Light Weight . . . 2¼ oz. Removable gloved high tension lead. INTRODUCTORY PRICE..... $1.75 p.p.

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225' Skeins—1/30"
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White .....5c sheet
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or fiber. Make all ribs full size as tapering is done while assembling. The center spar is made next. Be sure to have the taper and dihedral angles correct and true. Assemble the spar over a drawing. Next shape the two center portions of the leading edge. This can be best done by drawing two lines "m" and "n" with soft pencil to show the limit of taper. Take the leading edge and superimpose it over the dihedral drawing and butt joint in the center. Now mark the rib spacings on both spars.

The wing is assembled by cementing the thirteen ribs which constitute the two center panels to the leading edge and center spars. The wing is kept aligned by sighting chordwise from the leading edge. If the leading edge and center spar are parallel you may be sure of perfection, since both have the same center dihedral.

While the ribs are setting make the trailing edge. The center portion is a straightforward taper, while the curved tip outline has to be cut from 3/32" sheet. Keep the 3/32" inner edge thickness throughout. The center trailing edges are cemented one at a time, and be sure to block the inner edge about 1/16" to have it conform to the airfoil outline. You can now handle the wing without fear of having it fall to pieces, as is the usual case when it is assembled all at once.

The tips are simple to duplicate if you stick to the outline. Set the tip flat on a table. Cement tip rib in place and follow up with the tip and trailing edge outline. Note that the trailing edge angle changes from positive to zero. This is done by first cementing it to the last full size rib and letting it dry well before attempting to give it a twist. You will find that blocking and putting on weights will be of help.

The next step is to cut the full size ribs to taper. The drawing covers this well. Do not attempt to make every rib fit individually. Just cut off the bottom camber so that it rests flat on the table while the spar is abutting the top portion of the spar slot in the rib. Fine tapering is done after the leading edge is in place and you can see what you are getting. This is done with plane and sandpaper. Note how the leading edge is made. It was too difficult to bend one piece so it had to be made in laminations. It works fine and gives very strong construction. The wing is finished by covering the top and bottom of the leading edge with sheet balsa and capping the ribs. Be sure to taper the caps for the trailing edge before cementing, and cement the sanded portion against the edge. Cover with regular red tissue and apply two coats of clear dope.

Tail Surfaces

If you've managed the wing, the stabilizer should give you no problems. The only awkward part is the tapering of the ninety degree cuts on the ribs. The idea is to assemble the ribs on center and trailing edge. Then cut the ribs so that they form a straight line for "A" and "B". Cuts can be done with "eye-guestimating." The tapering of ribs is done after the leading edge is in place. The 1/64" covering of leading edge and rib caps complete the job. Rudders are self-explanatory. Cover the stabilizer with red paper and the rudders with yellow. Water-dope and then apply two coats of clear dope. Cement the rudders to the stabilizer when both are dry.

Propeller

The original propeller was made as perfect as possible, using hard and clear balsa. Carefully mark out your blank and drill the shaft hole. The original prop balanced at every point of carving operation. Cut the lower camber first and shape it to a flat angle. Then draw a line one-third from the leading edge and cut out the front portion to the camber depth. Then carve away the rear portion. This will guarantee a true airfoil shape. After making sure that both sides are identical, shape the upper camber. Stop every now and then to feel the curvature. The tip outline can be had from side view and pictures. The blades are finished with 10-0 sandpaper and at least six coats of dope-thinned cement. This produces a glass-like surface.

The nose plug is made as shown. Note how the square cut-out from the front bulkhead provides us with a perfect setting plug. Cement the plug and round disk together. When dry, drill a 1/8" center hole for the threaded bushing. This threaded bushing clamps the pieces together as well as makes it very easy to fasten various metal parts securely to the plug. The prop shaft is made full size. Start the bending with the hook.

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Day by day model experts everywhere are realizing that the Dennymite is not just another model engine. A high speed motor developing its horsepower at a higher rate of speed than most others, Reginald Denny engineers have developed a motor that has what it takes.

COMPARE THESE FEATURES

LONG LIFE—Cylinder and Piston both alloy cast iron—minimizes friction. **Bearings** NEW HEAVY DUTY BEARING BRONZE. **Crank Case** special aluminum alloy—withstands terrific shock. **Timer** simple and fool proof—composition rubbing block eliminates constant adjustment due to wear.

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DE LUXE AIRSTREAM Complete with coil, condenser, Dural motor mounts, De Luxe long exhaust and exclusive spring choke **$17.85** post-paid

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AIRSTREAM UNIT Same as Standard Airstream less coil and condenser ..... **$13.85** post-paid

SPECIFICATIONS

Displacement .57 cubic inch—bore 9/10—stroke 9/10—two cycle *1/4 horsepower at 6500 r.p.m.* Height overall including spark plug 4 1/2 inches, length overall 5".

GREAT PRICE REDUCTION on DENNY RUBBER MODELS!

Thousands of These Rubber Endurance Models Have Been Sold All Over the World.

SKYLARK was 50c
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Powered by Dennymite engine this gear driven model won the Pacific Coast championship race at Fresno, California, March 26, 1939, under sanction of Model Midget Racing Association. *Mercury Midget took nine out of the first ten places.*

Precision Props

Did you know that 14 out of 15 contests held in Cal. last year were won with *Precision Props*.

9" to 14"	50c	18"	$1.25
15"	65c		
16"	85c	20"	1.50

MERCURY MIDGET KIT COMPLETE, postpaid..... **$19.50**
(Less Motor and Flywheel)

SPECIAL DENNYMITE RACING ENGINE, postpaid..... **$17.85**
(Including coil, condenser, fly wheel and polished aluminum long exhaust)

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HELICAL
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MINIATURE CELLULOID MOTORS

4 sizes: 1¼"; 2"; 2¼"; 3"

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These lightweight motors have been designed to our specifications. Every detail of the original radial engine has been accurately reproduced even to the cowl plate at the front. They are a distinct improvement over any other dummy motor. At Whitfield's low price, they can be easily included in every flying model kit.

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The spinner portion is made by the planking method. Large face bushings with crimped edges provide the extra strength needed for ball-bearing and shaft hook bearing. The cone portion was made from celluloid, but it was done hurriedly and it did not prove ideal. However, it is recommended that some sort of spinner be used as they will come "into their own" soon.

Flying

The original model needed very little down and side thrust, though the rudders had to be increased to the size now given. The wing was left alone and the glide was taken care of by the stabilizer. It was slightly positive, but since then the rubber anchorage was moved forward two inches so that there was less load on the tail and the stabilizer came back to its zero setting. Do all testing with gradual increase in winds. The original had two large face bushings fixed near the middle to provide motor anchorage for full power, but short power tests.

After the 17 minutes, 6.2 seconds flight an attempt was made to qualify for the Wakefield team. But "Lady Luck" was looking elsewhere. While connecting the free-wheeling hook to the prop hook, the wire pulled out of its anchorage and the rubber whizzed away the hard earned turns. Pretty soon the windows were covered with balsa dust and scraps. When the fun ended it was found that the main longerons by the nose were sheared away; only the silk-covered balsa sheet prevented utter collapse. Temporary repairs helped but the "IT" was gone for that day. Undoubtedly the fuselage was weakened too much to keep the necessary adjustments. During the Moffett finals, the model turned in a flight over two minutes in high wind to place sixth in the final result.

Since the Nationals, the model has been reconditioned during a European trip. The original silk covering was ripped off and the fuselage repaired. While being re-covered the rear portion became slightly twisted, but this was offset by changing the stabilizer mount. The model was finally brought into its former self somewhere in Europe and was flown in exhibition in the Italian Nationals; holding up the American tradition of high climb and good glide. In all, the design is something on which one can count.

Notes

The high pitch prop proved practical. Silk covering gives a very fine finish and good handling strength. High angle of incidence is recommended; in fact, it was found that the model actually glides at about ten degrees. Twin rudders proved to be too sensitive, especially since the entire stabilizer had to be moved. However, if you intend to use twin rudders be sure to incorporate tabs. (Tests on New Yorker III showed that twin rudders do contribute to the stabilizer efficiency and that their combined area must be one-third larger than that of a single rudder.) The 1939 design or the New Yorker V will very likely follow the present general design. However, a single rudder will be used and the wing will be set at even a greater angle of incidence. The fuselage will have a larger section at the rear as the present one proved too flexible under full power. The power will be kept to eighteen strands but the model will be lightened and longer motor used. These are about all the recommendations we have at the moment. So, may the thermals be at your beck and call!

Frontiers of Aviation

(Continued from page 13)

diameter is 40 feet with a blade area of 55.2 square feet. Its so-called wing loading is 41 lb./sq. ft. which shows a great contrast between that of an autogyro and an airplane. The power loading is 10.01 lb./hp. Payload is 150 pounds; top speed is 127 m.p.h.

A unique airplane is that being promoted by Benny Howard. It will be a large twin-engined cargo carrier for the army. Of high-wing design with the engines located in the leading edge of the wing, it will have a nose wheel and non-retracting main landing gear. The tail is of the double-rudder type but the unique feature of the airplane is that the fuselage is hinged at one side near the tail. Thus the aft portion of the fuselage holding the tail may be swung around toward the wing when the plane is on the ground, leaving the rear part of the fuselage open to facilitate the loading and unloading of army supplies. The tricycle landing gear permits the fuselage to rest horizontally on the ground and with the use of a ramp sliding from the rear of the fuselage even small caterpillar tanks may be loaded into the cabin. The tail is then swung around into place, and the plane is ready to take off with its heavy cargo.

From Glenn L. Martin comes lots of news on military planes. Their long awaited navy patrol bomber has at last taken to the

REAL ENGINE VALUE—$5

Here is your opportunity to buy a kit of the famous G.H.Q. Gasoline Motor. ABSOLUTELY COMPLETE—ALL MACHINING DONE—READY TO ASSEMBLE. All you need is a screwdriver. BUILD YOUR OWN ENGINE AND SAVE!!

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Indeed an engineering triumph—accomplished by outstanding G.H.Q. designers and engineers, who have constructed into the G.H.Q. motor everything that years of exhaustive scientific aerodynamic research could produce—geared to the highest possible degree of perfection. But more than that, the acid test . . . an overwhelming response. Thousands of users in all parts of the country are praising, recommending, and endorsing this scientific achievement. It seems as if everyone in America wants one. The most hair-raising thrill you've ever experienced will be yours with the G.H.Q. motor—actually one of the most powerful motors ever constructed. Has broken records for amazing performance . . . and just imagine—flies model planes up to 10 foot wingspread. AND JUST AS EFFICIENT FOR BOATS AND STATIONARY USE. Easy to start and simple as ABC to assemble.

Everything is in the kit including Champion spark plug, Winston coil, condenser, tank and cap, ignition wire, cylinder, piston, connecting rod, timer, crankshaft, all screws, nuts, bolts, complete instructions, etc. Every part is fully machined and finished. No oil, gas, batteries, or propeller included. A SCREWDRIVER IS THE ONLY TOOL YOU NEED.

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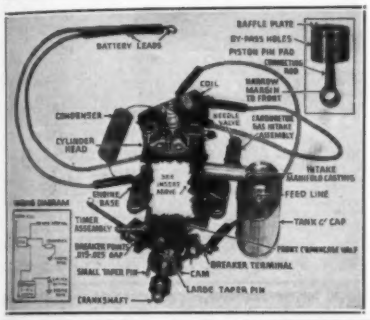

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The new 1939 model now for sale includes the new unbreakable steel stamped piston giving high and perfect compression.

SPECIFICATIONS

4 Port 2 Stroke Cycle. ¾" Stroke. 15/16" Bore. 300-7,000 R.P.M. Turns 14" Prop. 8" Pitch. Bearing Surface, 1¼" Long. Crankshaft, 5/16" Diam. Weight, 10 oz. (Motor) Rotation, Either Direction. Height, 4½"—Width, 2½" H.P. Approx. 1/5th.

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Thousands of Satisfied Users! Read some of these testimonials on file with us:

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A. K., Hillside, N.J.—"I still can't understand how you can put such a dependable and rugged engine on the market at such a low price."

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The G.H.Q. Gas Engine sold four years ago for $35. Today, you can secure a vastly improved engine kit for only $5. How is this possible? Simply because we have invested thousands of dollars in tools, jigs, dies and equipment to produce the only mass-production motor in the market. All parts are uniformly perfect.

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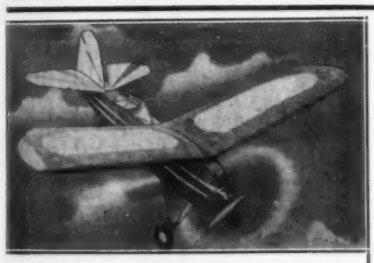

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Tested by actual users for 5 years, includes movable wings, spruce, balsa, cement, bamboo tissue, finished wheels, wire, aluminum, complete plans, etc.

ONLY $5.00

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Small and light enough to take any engine in the market, and rugged enough to take engines up to 1/3 horse-power, the ROBOTAIRE was especially designed for the G.H.Q. Engine on which it has been flight-tested for over 100 hours in the experimental model.

Kit is absolutely complete including plans, tissue, wood, wheels, metal motor mount, cement, dope, etc. Construction will provide a thrill for the most experienced builder, but plans are simple enough for the beginner to follow.

Order your ROBOTAIRE today and enjoy the thrill of flying a 1939 designed gas job.

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Brand new exclusive method makes it possible for even a beginner to build the super streamlined monocoque elliptical all balsa fuselage. Balsa stressed wing. Simple as A, B, C. Every advanced feature incorporated in the kit. Wingspan 39", length 30". Meets N.A.A. rules.

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WORLD'S RECORD RUBBER
This rubber holds every world's record. Makes every model a potential winner!

Size			
1/32—28'	8c	225'	30c
3/64—18'	8c	225'	35c
1/16—14'	8c	225'	40c
5/64—12'	8c	225'	50c
3/32—10'	8c	225'	60c
7/64—8½'	8c	225'	70c
1/8—7½'	8c	225'	75c
9/64—6½'	8c	225'	80c
5/32—12'	10c	225'	90c
11/64—10'	10c	225'	$1.00
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For all Midget Engines under ⅛ H.P. Weighs ½ oz. Only.....
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TAIL WHEEL AND FORK
Aluminum, sponge-rubber wheel, Wt. 5cant ½ oz. All gas models.....
50c

Designed to fly as MONOPLANE or BIPLANE
SPAN 40" Wt. 15 oz.

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2 in 1
DeLuxe Midget Gas Model Kit
for small bore engines
THE HUMMING BIRD
Simple to build; an outstanding performer for competition or sport. NOTE: The Humming Bird is the ONLY MODEL DESIGNED TO FLY AS A BIPLANE OR MONOPLANE! ★ Removable power unit ★ Ready cut notched ribs ★ M & M Pneumatic Wheels ★ Semi-carved Propeller ★ Full size plans ★ Colored bamboo paper ★ Berryloid Liquids ★ Plans only 50c.
100% complete Kit postpaid..... $3.95
POLK'S 429 Seventh Ave., Dept. M-6 NEW YORK

air on its first successful test hop. It is an exceptionally sleek airplane with two high horsepower twin-row engines. Its 118 foot wing is gulled, as it fairs into a well designed hull, and is extremely tapered. A full cantilever arm holds the wing floats, which retract inwards into the outer panels of the wing. There is a noticeable angle of incidence to the wing, which is usually the case with modern flyingboats, to facilitate quick take-offs. The engines are well cowled with cooling flaps employed.

The hull is of likely shape, setting high with small beam and plenty of flare to the bow. This is true with all the successful boats being designed now. There is very little width added to the hull though the height is more than doubled. One step is located at about mid-ships with the bottom of the hull ending abruptly at the three-quarters aft mark where the hull tapers off into a boom-like structure to hold the two-rudder tail. In the bow is a glass enclosed swivel-gun turret and just aft of the trailing edge of the wing are blister type turrets on each side of the hull.

The tail sets high above the water, incorporating very large rudder tabs consisting of half the rudder area. These undoubtedly work on the booster or servo tab principle and take excess loads off the rudder pedals when the pilot turns the airplane. Construction of the flyingboat is of all-metal stressed skin, monocoque design throughout. The official designation of this new Martin product is the XPBM-1 and is the first of 21 to go to the U.S. Navy.

It was only a matter of a few weeks after the completion of the Martin patrol bomber when another new Martin product came out the doors of their huge plant at Maryland. This time it was a high speed twin-engined attack-bomber for the competition held at Wright Field on March 17th. Martin had received an order for 115 of this type of plane from France, and it was a surprise when Martin sent it into the U.S. Air Corps competition with North American and Stearman. The attack bomber is different from anything Martin has designed before. It is a semi-mid-wing, almost considered a low-wing, with two 1600 hp. Twin-Row engines rated at that horsepower for take-off. Unlike most new airplanes there is no tricycle landing gear, having the ordinary gear that retracts into the large engine nacelles. The engines are mounted in the leading edge of the tapered wing which in outward appearance resembles the wing on the Lockheed "14."

The fuselage is very slim with a gun turret in the nose and an enclosure on top for pilot and co-pilot seated tandem fashion. The belly of the fuselage raises abruptly in the same manner as the North American Dragon bomber, in order to incorporate a roomy gun turret. Another turret is located aft of the pilot enclosure and at the tail is a single rudder with the horizontal tail setting rather high In this position it is not blanketed by the wing when landing. A comparatively small airplane, it weighs a little over 15,000 pounds, which puts it in a class with the ill-fated Douglas attack-bomber. Reports have stated that the plane will do 330 m.p.h. which seems a trifle optomistic. However, it is possible that it may reach speeds up to 300 m.p.h. The

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SIZES 1⅞—2—2¼—2½—2¾—3"—3½"—and Special Designed DeNut Wheels. Size 1¼"—PRICE $0.60 PER PAIR, POSTPAID. For Air Mail Add 11c.
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wingspread is 65 feet.

As usual, what was expected to be a big turnout for the competition dwindled down to three airplanes, the others having withdrawn because of crashes, incompleted airplanes and mainly because of the stiff competition that Stearman, North American and Martin offered. The latest news is that Douglas still has a chance to get orders for her product. One hundred ships, of a development of the ship that crashed, have already been ordered by France. It is said that the general appearance of the attack-bomber will not be changed much but its structure will be completely re-stressed.

Published results of the opening of bids for the attack-bombers are as follows: North American was low bidder and asked $456,000 for one airplane or $51,000 each in lots of 700 to 2000 units. Glenn L. Martin bid $926,680 to $993,500 for one ship, $71,000 each in lots of 300 or $56,000 in lots of 2000. Stearman bid $435,000 for one or $70,686 to $83,280 in lots of 300. Tests of the airplanes will be conducted before any of the ships are ordered.

Lockheed recently started test flights on its new Model 212 light bomber to make way for the future delivery of twelve of the type to the Netherlands East Indies. The 212 is a development of the Model "12" with a swivel-gun turret atop the aft part of the fuselage as the only noticeable outside change. However the interior is completely equipped for military use. A fixed gun is located in the nose with bomb racks under the wing between the two engine nacelles.

Powered by 450 hp. Pratt & Whitney engines, the airplane can climb to 10,000 feet in eleven minutes and cruise for five hours with a load of 9,200 pounds. High speed, 250 m.p.h.; cruising, 220 m.p.h.

Seversky is said to have entered two ships in the recent pursuit plane competition. One was a single-place job with flush rivets, flush landing gear when retracted and one of the larger twin-row engines in the nose. The other was an even more advanced version with turbo-supercharger located some distance from the engine, near the tail of the ship. This was probably done to permit better cooling and prevent the emanating hot air from the supercharger from running down the side of the fuselage. Skin type oil radiators are said to be located on the sides of the pilot's cockpit which would heat the cabin at high altitudes. The sleek ship is of the low mid-wing variety.

Some other news items . . . . Jack Northrop is well under way with the forming of a new company, and the first product is expected to be a super-army craft. It is said that Dougles has put two of the new "1830" 1,600 hp. (at take-off) Pratt & Whitney engines in a new B-18 bomber. Did you notice that the propellers on the Lockheed XP-38 twin-engined interceptor turn in opposite directions to counteract the torque? Douglas may build a Bendix racer from Northrop designs for one certain aviatrix. Rumor has it that Boeing may build an interceptor with two Vega engine units in it. In England an enterprise is being fostered for the development of a racing plane to break the world speed record held by Italy for the past many years.

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Chock-full of power, speed and stamina!
SPECIFICATIONS
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1/4x1/2....3 for .14
1/4x1....3 for .15
3/16x3/16.....5 for .25
3/16x1/2.....2 for .10
5/16x1..2 for .19
1/4x1/4....6 for .25
1/4x1/2....4 for .25
1/4x3/4....3 for .25
3/4x3/8....3 for .25
3/4x1/2....3 for .27
1/4x1.....1 for .10
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Each.....35

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CEMENT
4 oz.....18
8 oz.....35
1 pt.....60
Dope, Paper Adhesive, Colored Dope same prices as cement.

SPRING STEEL WIRE
1/16 dia., 5 ft.....10
3/32 dia., 5 ft.....15
1/8 dia., 5 ft. .25
3/4x3/4 per ft. .22

STREAMLINED ALUM. TUBING
1/4x1/2 ft.....15
5/16x5/32 ft.....16
3/4x3/16 ft. .18

OHLSSON AIR WHEELS
2 1/4" dia.....$1.25
3 1/2" pr.....$1.50
4 1/4" pr.....$1.75

M & M AIR WHEELS
2 5/8" dia.....$ .90
3 1/4" pr.....$1.50

KNIFE SWITCHES
2-pole—1 for .20
3-pole—1 for .30

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Heathe Super Spark Coil$1.50
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GAS FUNNEL
with strainer .30

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0 sec. to 1 min.....$1.95

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Extra small—wt. 1/2 oz.
Per set of 4.. .25

GLASS DROPPERS
Each.....05

CONDENSERS
1 1/2" long, 1 for.....15

WOOD SCREWS
1/2, 3/4, 1— 6 for.....05

ALLIGATOR CLIPS
Each.....10

ALUMINUM RIVETS (Lightweight)
3/32x3/16—
1 doz.....5c
1/16x1/4—
1 doz.....5c
1/8x1/4—1 doz. .5c

TERMINALS (Spring Clips)
3 for.....5c

NUTS AND BOLTS
3/4, 1, 1 1/4, 1 1/2
Any 3 sets.....5c

HOOK UP WIRE
Grade BB, 5 ft.....10c

GAS MOTOR COWLS
6 1/2"—1 for $1.25
8"—1 for $1.50

SHEET ALUMINUM
.010 sq. ft.....20
1/32 6x6.... .15
1/16 6x6.... .20

MASKING TAPE
1/4"—3 ft. (1 car) .05

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1/8x1/8.....30—5c
1/8x1/4.....10—5c
3/16x3/16.....8—5c
1/4x1/4.....8—5c
1/4x1/2.....5—5c

18" SHEETS
1/64x2.....4—10c
1/32x2.....6—10c
1/16x2.....8—10c
3/32x2.....7—10c
1/8x2.....6—10c
3/16x2.....5— 9c
1/4x2.....3—10c

PROP BLOCKS
1/2x3/4x6.....3—5c
5/8x1x8.....3—5c
3/4x1 1/4x10 3c ea.
3/4x1 1/4x12 3c ea.

18" PLANKS
1x1 5c; 1 1/2x2 6c
1x1 1/2 9c; 1x2 10c
1x3 15c; 2x2 18c
2x3 23c; 2x6 39c
3x3 40c; 3x6 75c

BAMBOO
1/16 sq.x14 .....35 for 5c
1/16x1/4x15 1 doz. for 8c

COLORLESS CEMENT
1 oz. 5c; 2 oz. 9c
4 oz. 16c;
1 pt. 50c
Clear dope, banana oil, thinner, same price as cement.

COLORED DOPE
White, yellow, orange, blue, red, green, olive drab, black, silver, gold or gray.
1 oz. 6; 2 oz. 10
4 oz. 19; 1 pt. 65

HIGH GLOSS
1 oz. 9c;
2 oz. 16c
4 oz. for 28c

RUBBER-LUBE MICRO-FILM WOOD-FILLER
1 oz. 10 2 oz. 15

TISSUE, AA
All col., doz. 19c
Superfine, white, 1 doz. 15c

WHEELS per pr.
Birch Bias Celu
1/4".01 .03
3/4".02 .04 .05
1".03 .05 .07
1 1/8".04 .08 .10
1 7/8".07 .10 .16
3".15 .15 .30

ALUM. TUBING
1/16, 3/32, 1/8, 1 ft., 7c
3/16, 1/4, 1 ft., 10c

PROPELLERS

Balsa	Paulownia
5"—4c	10c
6"—5c	15c
7"—6c	20c
8"—7c	25c
9"—8c	30c
10"—8c	35c
12"—10c	45c
14"—14c	
15"—15c	60c

RUBBER
.045, 25 ft. 5c
1/16 sq. 15 ft. 5c
1/8 flat 15 ft. 5c
Skein for 50c
3/16, 10 ft. 5c

THRUST BEARINGS
Small, 1 doz. 10c
Large, 1 doz. 15c

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1/16 dia., per doz.....05
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1/8 dia., per doz.....09

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1 doz. 1/8 or 1/4 1c

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1 sheet.....05

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For rubber powered models
1/8"-1"-1/8".....
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CELLULOID MOTORS & COWL RING
1 1/2"—1 for.. .10
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3"—1 for..... .20

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1 1/2" dia., 1 for..... .15
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3" dia., 1 for..... .25

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1" per pr..... .08
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1 7/8" per pr. .30

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Vultee has completed one of their V-12 attack-bombers and has equipped it with floats for the Brazilian Air Force. A 1,600 pound torpedo may be carried under the belly of the fuselage between the two floats.

The latest in Ranger engines is one with cylinders cooled under pressure. This method of sending air over the engine under pressure permits the use of lighter cylinder construction and gives the 500 hp. Ranger engine a weight of 1.28 lb./hp., making it more than 200 pounds lighter than its nearest competitor.

In England two new two-seater fighters have been developed, namely the Boulton Paul "Defiant" and the Hawker "Hotspur." Both are low-wing, all metal airplane with retractable landing gears and Roll-Royce Merlin engines. The pilot sits in an enclosure on top of the fuselage with the gunner seated in a mechanically-driven, swivel-gun turret just aft. The turrets are rather larger and spoil the graceful lines of the airplanes. Otherwise they look very fast, and it is said that the "Defiant" has reached close to 300 m.p.h. Dimensions of the two planes are as follows:

	Defiant	Hotspur
Span	39 ft. 6 in.	40 ft. 6 in.
Length	30 ft.	32 ft. 10½ in.
Height	12 ft.	10 ft. 11 in.
Wing Area	250 sq. ft.	261.5 sq. ft.

Following is a list of airplanes that have just made their debut or that will soon do so:

New American Airplanes of the Present and Future Mattie Laird: 2-3 place cabin monoplanes for sport use. Bellanca: Two military designs of about 4,500 pounds gross weight each. Sikorsky: Double-ruddered version of the S-43. Stearman (Boeing Division): Twin-engined attack bomber. Lloyd Stearman: Small twin-engined feeder transport. Lockheed Aircraft Corp.: 27 passenger transport, 35-passenger transport with tail first, Twin-engined Allison interceptor, Military Model 12. Allan Lockheed: Small, light sport trainer. Tim: Military trainers. Phillips: Biplane Menasco trainer, Ranger powered XPT-1 military trainer, Single-engined attack-bomber. Martin: Gull-winged Navy patrol bomber, Twin-engined attack-bomber. North American: Single-engined export pursuit. Seversky: Low mid-wing pursuit with turbo supercharger in tail, 1,600 hp. pursuit. Burnelli: Three engined transport. John K. Northrop: New Northrop plane. Douglas: 250 foot bomber, DC-5, Twin-engined attack-bomber for France, Bendix racer. Stinson: 75 hp. trainer. Boeing: Interceptor with two Vega engine units. Cessna: Twin-engined sportplane. Curtiss: CW-21 interceptor, 1,400 hp. pursuit, Attack-bomber. CW-20 transport. Harlow: Tandem seated trainer. Benny Howard: Small light trainers, 40 passenger army transport, Fighter version of "Mr. Mulligan" for export. Brewster: Twin-engined attack-bomber. Bell: Allison powered pursuit, single-engined, Twin-engined attack-bomber. Consolidated: Twin-engined patrol bomber. Erco: Light sportplane. Dart: 145 hp. sportplane. Allied Corp.: Light sportplanes and trainers. Vultee: Twin-engined interceptor.

The XP-40 Takes to the Air

(Continued from page 9)

duced an even better one. It's a good thought for model builders.

Wing

The wing of the model is laid out in one piece. Don't be alarmed if the size of the leading and trailing edge stock seems excessive. After you've shaped the wing to airfoil section, you'll find that most of the leading and trailing edge pieces have been cut away. Ailerons are optional. We'd suggest that you omit them on a flying model, as they add considerable weight and spoil the smooth wing surface.

A very simple way to bend the bamboo for the wing tips is to hold it against the end of a lighted cigarette. If you hold the bamboo just within the ash, but not quite touching the burning end, the bamboo will bend very nicely without charring.

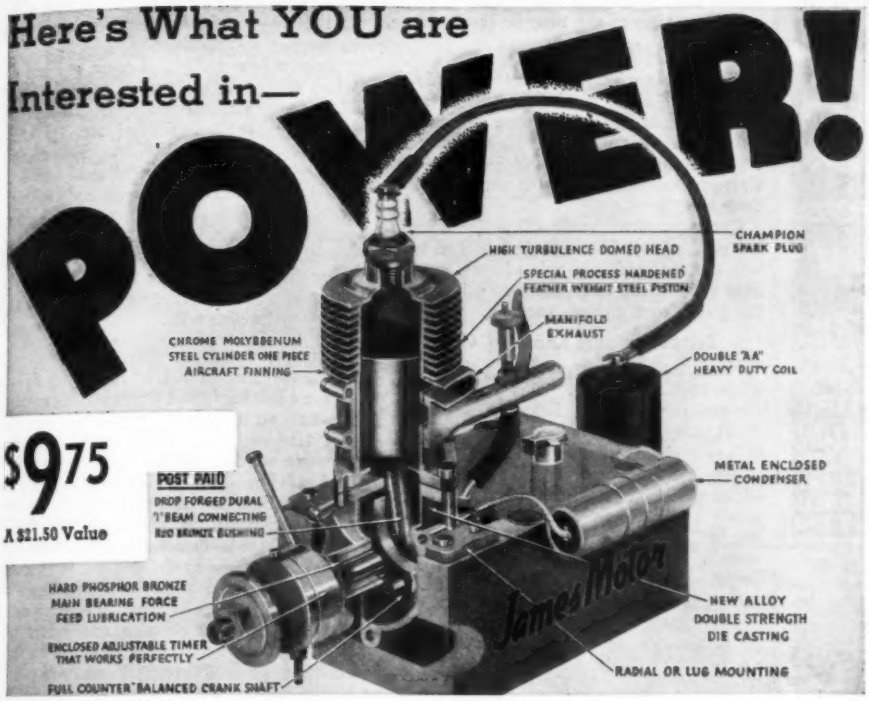
In assembling the wing, leave the leading and trailing edges square-cornered until the wing is assembled and the cement has dried thoroughly. Then carefully trim them to shape with a sharp knife and finish with a sandpaper block. At this time you can sand sharp edges and bumps of cement from the other parts of the wing frame.

Fuselage

With a razor or a sharp knife cut out two halves of each fuselage bulkhead. All bulkheads except A, B and C are 1/16" sheet; A, B and C are 1/8" sheet. Cement corresponding halves together with short pieces of 1/32" bamboo across the joints for strength.

Cement bulkheads E, G and H to the

PACK YOUR SHIP WITH POWER!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DROP FORGED DURAL T BEAM CONNECTING ROD BRONZE BUSHING
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James Motor
NEW ALLOY DOUBLE STRENGTH DIE CASTING
RADIAL OR LUG MOUNTING

SPECIFICATIONS

Displacement .60 cu. in. or 9.9 c.c.—15/16 Bore—15/16 Stroke—4 Port—2 Cycle—1/4 Horsepower—Weight Bare 8 oz.

THE JAMES MOTOR IS PRECISION BUILT AND HAND LAPPED FOR HIGH SPEED—7500 R. P. M. WITH 13" PROP. ACTUAL VALUE $21.50

Blue Star Gas Model Plane

THIS PLANE IS A CONTEST WINNER and is perfectly balanced, precision built, and can be assembled by anyone very quickly. It comes with all parts accurately cut, including silk and hardware. The plans and specifications in this kit are full size. It has a 5-foot wing span. The regular price is $5.00.

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De Luxe Combination

James Motor, Value	$21.50
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Accurate Light Weight Flight Timer	1.50
Hi-Rev. Precision 13" Prop., Value	1.50
Total Value	$31.00

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Individual pressed-on fins, enables the engine to maintain compression at intense heat and terrific speeds.

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One piece counterbalanced and ground crankshaft with force feed lubrication, adds long life and strength by absorbing motor vibration.

Die castings are special aircraft magnesium base aluminum alloy.

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"I like my 'James' Motor very much. After running it for 4½ hours at half throttle, I opened it up and my Comet Clipper fairly jumped off the snow. It climbed for about 200 feet, and it was really going almost straight up." *Al Sibley,* Hardin, Montana.

"I am a James Motor fan and have been instrumental in selling about 3 of them. All together, there are 6 James (motors) in town and getting thicker; swell motor." *Grant Rice,* Reno, Nevada.

"I received my motor and am 100 per cent satisfied with it. After following your instructions, it ran immediately for me." *Ralph Gaebel,* Jeannette, Pennsylvania.

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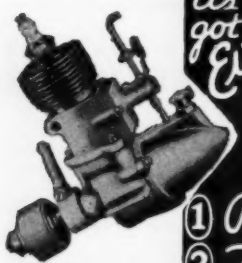

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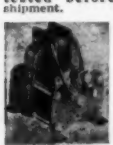

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wing center section and add the two 1/8" x 1/16" balsa side stringers. To these add the remaining bulkheads and the tail post which is also 1/16" x 1/8" balsa. The remaining stringers can now be put in place.

Tail Surfaces

The tail surfaces are cut from 1/32" sheet balsa. We have found these sheet balsa tails to be much more satisfactory on small models than built-up surfaces, for they are lighter and much less liable to warp, to say nothing of the time saved by their simplicity.

Choose a firm grade of medium balsa. Do not use soft brittle material. The bamboo stiffeners on one side of each surface help to keep the balsa from splitting. Sand the pieces to a smooth surface.

Propeller and Landing Gear

Note that a low pitched propeller is designated for flying. This is important, for unless your model is very light, it will mush badly when equipped with a propeller of too high a pitch.

The landing gear has been simplified somewhat from the original, in that the cover plates have been omitted. These would only be a hindrance on a flying model. Model builders desiring an exact model can obtain this detail from pictures of the full scale XP-40.

Cement the landing gear struts in place before covering the wing. The balsa fairings are added after the wing has been covered. They are cut to fit from small pieces of scrap balsa.

The propeller spinner can also be carved from a small block of balsa, but in constructing the test model, we found it simpler to build it up from rings of 1/8" sheet balsa, sanding the final assembly to conical shape. Diameters of the rings are easily obtained by directly measuring from the plan.

Fairing

The wing fairing on the model gave us something to worry about for a while. We thought of using bond paper, but didn't like either the appearance or the weight. Finally we used 1/32" sheet balsa with excellent results. Fitting the fairing is pretty much a "cut and try" proposition which takes patience, but is not at all difficult. Probably the easiest way is to cut and sandpaper a piece of 1/32" sheet balsa which is somewhat larger than necessary, then pin and cement it in the desired position. When the cement is dry trim the edges of the fairing. We used two pieces on each side of the model, one between bulkheads E and G, and one between bulkheads G and I. The front end of the fairing curves too sharply for sheet balsa, so we carved this piece from scrap balsa, again using the "cut and try" method. When the fairing was in place we sanded the whole assembly smooth, doped it with clear dope, and then sanded it again.

Try fitting a piece of paper first, until you see how the fairing is to go, and then use sheet balsa.

Covering and Doping

Cover the whole model, except for the tail surfaces, with silver tissue. Then mix some thin scale model dope by using half thinner and half a good grade of silver model dope. Dope the model with this, giving three coats all over except on the tail which only receives two coats. Sand the model lightly between coats of dope. Dope the tail surfaces quickly on both sides, so that uneven drying will not cause them to warp.

Paint a blue stripe and seven red and six white stripes on the rudder, with the usual U.S. Army stars on the wing. Cement the tail and the small details in place. Markings may be added in India ink. The cockpit housing is covered with celluloid and then outlined in silver. Air scoops and radiators are carved from balsa, doped several times with silver dope, sanded smooth again and cemented in place. String the radio aerial from the rudder to each wing tip. Add the pilot tube to the left wing tip and the tail wheel under the tail.

Flying

Use two strands of 1/8" rubber for flying. If the model does not climb on this amount use two strands of 3/16" rubber. Correct any tendency to spiral dive by applying opposite rudder. In general you will find that every model flies best when circling in one direction, and this may be left for one model or right for another of the same design. Try to detect the natural turning tendency in your model and aid it as much as possible. If, after applying opposite rudder, your model "crabs," or slides sideways, relieve the rudder and warp the trailing edge of the inside wing down; that is, the wing which tends to drop. And, of course, if the model stalls, add weight to the nose; while if it dives sharply, warp the elevators up.

The secret of obtaining good flights with flying scale models is simply great patience. It is very improbable that your model will fly perfectly on its first flight. Treat your model carefully until you've learned something about its characteristics, then begin trying for long flights,—and you *can* get them with the XP-40.

How to Make Your Model Behave

(Continued from page 25)

be determined from observation. If the model climbs steadily and at the same time appears to be on the verge of stalling, but without actually stalling, you may assume that the model is adjusted for a maximum angle of climb. One might say that in such cases the model should be on the verge of hesitating in its climb without actually doing so.

If from the first flight it is evident that the model could climb at a steeper angle without a stall being induced, the wing should be moved slightly forward. This will bring the lift of the wing nearer to the nose when the plane is in flight and will have a tendency to lift the nose to a greater extent. If the wing is of the fixed type a little weight may be added to the tail of the model. In either case the center of gravity, or point of balance, should be from 3% to 5% of the wing chord back of the *original* point of balance.

Now the model is ready for its second test flight. If the model still does not assume its maximum climb angle after these adjustments, the wing should be

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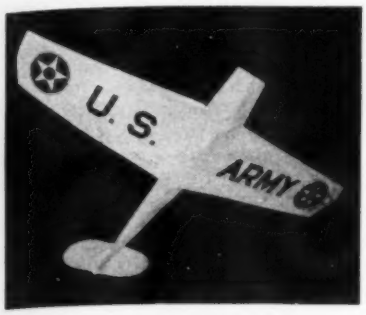

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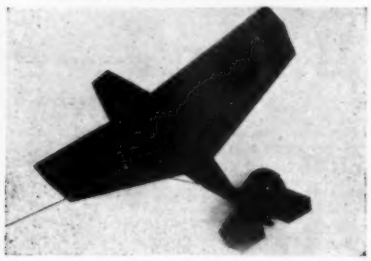

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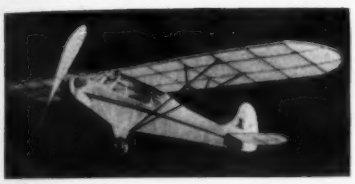

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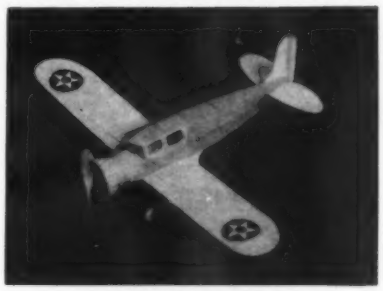

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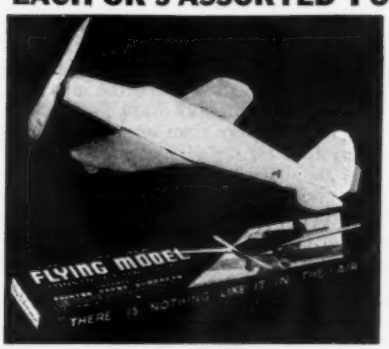

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3/32x1/8 30 for 5c
3/32x3/16 12 for 5c
3/32x1/4 10 for 5c
3/16x3/16 8, 5c
1/4x1/4 6 for 5c
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1x1 1/4 9c; 1x2 10c
1x3 15c; 2x2 18c
2x3 23c; 2x6 39c
3x3 40c; 3x6 75c

BAMBOO
1/16 sq.x12, 3d, 5c
1/16x3/4x15.dx.10c

CLEAR DOPE OR THINNER
5c per oz.; Large bottle, 8c; 1/2 pt. 30c; 1 pt. 45c

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6c per oz.; Large bottle 10c; 1/2 pt. 35c.
Champion Spark Plugs 65c

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5c per oz.; Large bottle, 8c; 1/2 pt. 35c; 1 pt. 55c

PROPELLERS

Balsa	Paul-O-Mash. Cut	Wina
5"	4c	10c
6"	5c	15c
7"	6c	20c
8"	7c	25c
9"	8c	30c
10"	8c	35c
12"	10c	45c
14"	14c	
15"	15c	60c

RUBBER
.045 ..... 25 ft. 5c
1/16 sq., 15 ft. 5c
1/8 flat ....15 ft. 5c
Hazin 50c
3/16 .....10 ft. 5c

RUBBER LUBRICANT
Large bottle....10c

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Will not splash or soil plane. Lasts 5 times longer than liquids. More efficient. Can 10c

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Battery Boxes
Penlite & 1" .40
Penlite, 1 1/4" .50
Alligator Clips .....2 for 15c

THRUST BEARINGS, dz.
Sm. 10c; lge. 15c

PROP BLOCKS
1/2"x3/4"x6 6—5c
5/8"x1"x8 3—5c
3/4"x1 1/4"x10 3c ea.
3/4"x1 1/4"x12 3c ea.
1"x1 1/2"x12 4c ea.
1"x1 1/2"x15 7c ea.

SANDPAPER
Doz. sheets.....5c

WIRE
6-8-10-12-14
2 ft.....1c
1/16 dia. 5 ft. 12c
3/32 dia. 5 ft. 15c
1/8 dia. 5 ft. 25c

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Doz. 8c

TISSUE, AA
All col., doz. 19c
Silver .....ea. 5c
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1/16, 3/32, 1/8, 5/32 ft. 7c
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3/16x3/16 8 for 20c
1/4x1/4 6 for 20c
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3/4x3/8 1 for 8c
1/2x1/2 2 for 20c
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3/4	.02	.04 .05
1	.03	.05 .07
1 1/4	.04	.08 .10
1 3/8	.07	.10 .16
3	.15	.15 .30

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2 sheets 3c
.005 in. 6x6 5c
.010 in. 6x6 6c
1/32.....6x6.....15c
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3/8x3/16 ft. 18c

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Specify whether anti-drag or closed

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moved still further forward. On the other hand, if during the first flight you notice that the model stalls slightly and has a tendency to dive out of every stall, you may be sure that the wing is too far forward. Moving it slightly to the rear should correct such a condition. The proper location of the wing in any case should be determined by repeated tests until the correct position has been found.

Now the next phase of longitudinal stability must be determined through tests. We will assume that the wing has been located so that the model climbs steadily and without hesitation. When the power has been expanded, the model should seek its normal gliding path and coast evenly and at a very slight angle until it again contacts the ground. However, this type of glide does not always result. The ship instead may glide very steeply and, in some cases, the glide may even approximate a dive. This condition has puzzled more than one young model aviator. It is not always due to the fact that the plane lacks efficiency, but rather that the setting of the wings and tail is not correct for the particular ship being flown.

This flight characteristic is usually caused by an improper angular relation between the stabilizer and the wing. If the difference in angle between the wing and stabilizer is *too great*, such a flight will result. This large difference in angle causes a nosing up tendency when the plane is under power. Thus if the model is adjusted for correct balance when under power, the glide will be excessively steep when the power is off. The proper way to correct the trouble is to reduce the difference in angle between the wing and stabilizer. This may be done by increasing the angle of the stabilizer relative to the thrust line. Usually an increase of about half a degree is sufficient. This is only one-half the story, however, for when this change has been made the wing should be moved forward slightly, approximately a distance equal to 7% of the wing chord.

Now you must begin all over again and adjust the model for proper longitudinal balance *under power*. With this new setting, when the power flight of the model is correct the glide should be less steep, or flatter. If the glide is still too steep after this readjustment, increase the angle of the stabilizer still more and follow the same procedure of testing until the model climbs and glides correctly.

Now we must consider the second type of trouble that may develop when the ship is gliding. Instead of gliding too steeply it will perform in such a way that the glide will be characterized by successive stalls and dives. This is an indication that the angular setting of the stabilizer should be set at a *more negative* angle. This may be accomplished by lowering the leading edge of the stabilizer slightly. A change of half a degree at a time is recommended. (One degree is an elevation or depression of 1/16 of an inch in a running distance of four inches.)

The model builder may determine the amount of angular change of the stabilizer by the intensity of the stalling tendency during the glide. When the stabilizer setting has been changed to the correct amount the wing should be moved to the rear slightly (approximately a distance 5% to 7% of the wing chord). When this is done the model should be tested again for its correct climb, and adjustments made which are necessary to make the climb satisfactory. The glide may be noted after the power is shut off. If the stalling tendency has been reduced, but has not been eliminated entirely, the angular setting of the stabilizer should be changed still more. In all these cases you will have noted that the wing angle of incidence has not been changed in any way.

Summarizing briefly, for steep dives during the glide, increase the stabilizer angle and move the wing forward. For stalling tendency during the glide, decrease the stabilizer angle and move the wing backward. The adjustments described here are really all that are necessary in order to make your model longitudinally stable.

A sufficient number of flights should be made, however, in order to positively ascertain that a good flight is not merely the result of chance or of unnatural air conditions, such as gusts, bumps, etc. It is usually best to take plenty of time and make your tests precisely.

One of the difficulties that often intervenes is the cracking up of your model. This is the factor which causes the author to prompt you to select a well-padded flying field. A series of tests should not be rushed through, especially if you intend to fly your model in a contest. You

NEW CURTISS HAWK F11C4 NAVY PURSUIT

32½" Span. Length 22¾". 1" Scale. Weight 6 oz. Color grey, top wing yellow.

THE MOST EXCLUSIVE AND FINEST EQUIPPED MODEL IN THE WORLD. MOVABLE CONTROLS WORK FROM COCKPIT. A special de luxe model, one of the most beautiful ever made. Set contains a 4½" scale Wright Cyclone celluloid motor, detailed push rods, fins, etc., like real motor, 4½" aluminum cowl, 10" steel type carved prop shown, 2¼" wheels, tail wheel, star and rudder insignia and lettering, rubber, windshield, instrument board, flying wires, 4 aluminum step plates, aluminum wing walks, ready cut wheel pants, washers, 3 oz. grey paint, ½ oz. yellow, ½ oz. red, 2 oz. glue, etc. All other parts are printed on balsa wood. 33"x44" scale drawing. Const. set, complete in labeled box, postpaid..... $4.50

NEW SEVERSKY P35 ARMY FIGHTER

32" Span, Length 25", 1" Scale. Color, Silver

A brand new model of the 1938 Bendix Trophy Winner P 35. Set has 4" turned balsa motor front, 10" carved prop, balsa wheels, tail wheel, rubber, all parts printed on balsa, 3 oz. silver dope, ½ oz. black, 2 oz. glue, etc., insignia, and full size scale drawing. Const. set in labeled gift box, postpaid..... $3.25

BOEING B-17 ARMY FLYING FORTRESS

44" Span. Length 30". Weight 8 oz. Color, Silver

This is the only scale model of this plane in the world, and a sensation to look at. Set has all parts printed on balsa, 4 turned balsa motor fronts, 4 carved steel type props, celluloid wheels, rubber motors, 3 oz. silver paint, ½ oz. black, 2 oz. glue, etc. Full size large scale drawing, and all parts to build. Const. set in labeled box, postpaid..... $5.50

LOCKHEED P23A NAVY FIGHTER

COMBINATION LAND AND SEA PLANE SET

32" Span. Length 20½". Weight 3½ oz. ¾" Scale

Model will rise from land or water in few feet. Construction set contains fuselage and pontoon formers, wing ribs, tips, etc., printed on balsa, a 3⅜" turned cowl front, 2 instrument boards, colored insignia, lettering, windshields, 9" carved scale flying prop shown, 3 oz. silver paint, 1 oz. cement, ½ oz. black, 2 oz. glue, ready cut wheel pants, strong 2" aluminum wheels, 12 feet of rubber, and large 33"x44" drawing of land and sea plane. This is a sensational model and only one of its type in the world. Construction Set in labeled gift box, postpaid..... 2.95

BOEING F4B4 NAVY FIGHTER

SOLID EXHIBITION MODEL

22½" Span, Length 14½"; Color Grey, etc.

This is the finest solid exhibition model ever produced. Set contains completely finished balsa fuselage, with cockpit cut out, motor hole cut out and headrest attached; all you have to do is paint it. The wings, tail and rudder are all cut to shape, but have to be sanded to proper curve. A 3" celluloid motor with aluminum motor front, 3¼" tapered aluminum cowl, 7" scale chromium plated propeller, 4 cast bombs, 2 celluloid wheels, tail wheel, complete set of colored paints, glue, filler and all other parts with full size drawing. Set, postpaid..... $4.50

NEW DOUGLAS 043 GAS MODEL

NEW GAS MODEL $4.95 Postpaid Less Motor, Wheels, and Prop.

50" Span. Length 38". Weight with motor, 11½ lbs.

A real scale gas model with top performance. All parts printed on balsa, set of colored paints, insignia, tail wheel, etc. Model uses small Ohlsson "23" gas motor.

LOCKHEED ELECTRA EXHIBITION MODEL

27½" Span, Length 19½", Scale ½"

Plans approved authentic by Lockheed Aircraft Corp. This is a De Luxe model with special equipment. Set includes two 2" celluloid motors, aluminum motor fronts, two 2" aluminum cowls, two 4" three-bladed aluminum props, two 1½" M & M pneumatic air wheels, all parts printed on balsa, set of colored paints, glue, etc. This is the finest transport model made. Set, postpaid..... $4.50

Standard Set No. 2, same as above without special equipment. Flying model type. Set, postpaid..... $2.95

BOEING F4B4 NAVY FIGHTER

22½" Span. Length 14½", ¾" Scale

Set has 3" celluloid motor, 3¼" tapered aluminum cowl ring, paints, etc. Postpaid..... $2.95

BOEING P26A ARMY PURSUIT

22" Span. Length 17½", ¾" Scale

Set has 3" celluloid motor, 3¼" tapered aluminum cowl ring, paints, etc. Postpaid..... $2.75

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24" Span. Length 17". ½" Scale

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5 ft. Monocoupe 90A

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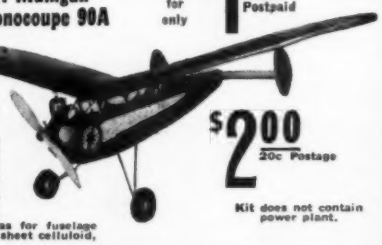
The "FLIGHTMASTER"



SPECIFICATIONS • Wingspan 48" • Overall length 28" • Weight with motor 21 oz. • A small bore gas model designed for sensational climbing and extra flat glide. • Super structural design for strength and durability. • Conforms with all weights and specifications of contest rulings.
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KIT COMPLETE WITH ALUMINUM PROPELLER.

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All kits can be obtained at your local dealer . . . if not, order direct.

THE NEW

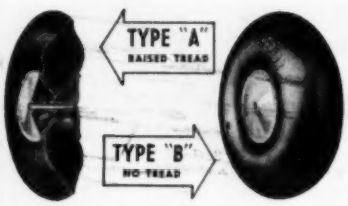
MERCURY

GAS MODEL BY SCIENTIFIC

See Page 39

MARPELL

STREAMLINES IN 2 TYPES



Get the finest gas model wheel money can buy. You pay only a trifle more, yet Marpells overcome the defects of wheels made by rubber toy methods. Now a choice of two types in 3½" and 4½" diameters. *Type A.* with raised tread prevents ground looping, permits safe landings in wind. *Type B.* with no tread for those who prefer newest, realistic streamline appearance.

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should fly your model again and again in order to make sure that you have established the desired adjustment.

Sometimes model builders mistake the result of improper launching for improper adjustment. Correct care should be taken when launching your plane to start it on its way with the proper flying speed (not too great and along a horizontal flight path; never tilting the nose of a model upward or launching it in a climbing position.

On some occasions when test flights for longitudinal adjustments are undertaken, the lack of correct lateral balance, or adjustment, may cause the model to side-slip, dive or execute various other gyrations that make the observation for longitudinal balance impossible. In such cases the model should be checked immediately for lateral balance and corrections made which will eliminate this trouble. One of the best ways to test for lateral balance is to glide the ship power off. If faults in lateral balance do not present themselves under such conditions put only a few winds in the motor and test the ship in a short flight. Of course, if you are adjusting a gas model this will be impossible; then it will be necessary to set the timer for a short flight.

If your plane falls off to the side when it is in level flight it is usually an indication that there is too little dihedral angle or too large a fin. If the plane is in a climb and it persists in turning to the left or right, it is not always an indication of lack of lateral balance, but rather of a stalling tendency. Under such conditions the plane is actually stalling and "falling off." Such a condition is corrected by moving the wing toward the rear of the plane slightly.

In some instances, model builders have proceeded to follow a system of adjustment with extreme care without being able to eliminate eccentricities in the flight of their model. Many times they check in vain for the correction of the cause of their difficulties. In such instances, it is not always a case of improper procedure in adjusting the plane, but rather some inherent fault in design which no adjustment will ever correct. Therefore if the model builder has done everything possible to adjust his ship without success, he should scan his design most carefully.

In some cases spiral dives, in the case of heavy models for instance, are caused by a condition in which the center of lateral projected area is too high relative to the center of gravity. The model builder, therefore, will see that it is wise to check his design carefully and be absolutely sure that his plane has been laid out according to the proper lines and arrangement of flight forces. This has been discussed in previous articles, otherwise many hours can be wasted in attempting to adjust a plane which never will fly properly regardless of how the surfaces and angles are manipulated.

The discusison of the problem of control in our next issue will pertain to making adjustments which will induce various types of flights. Also a few hints will be given which will show you how to do your own "trouble-shooting."

Building the Dolphin

(Continued from page 23)

following the dimensions on Plate 1. Note the slight sweep-back in the wing. It is suggested that a horizontal reference line be drawn through the leading edge of the wing at the root. Everything else may be drawn in relation to that line. The various chord lengths are obtained from this layout. In plotting the ribs it is recommended that the builder follow the method outlined on page 36 of the September issue of MODEL AIRPLANE NEWS. This article completely describes the method of plotting the individual rib or a set of ribs in a taper wing with facility. The wing is now built according to the favorite method of the individual modeler, or as follows if the builder has no definite method:

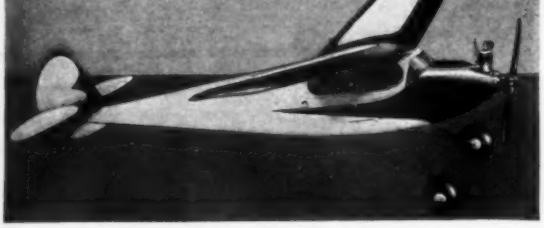
Tack down the wing-half drawing on a board large enough to accommodate it. Pin some 3/8" square hard leading edge stock in place over the drawing. It should be laid on one edge so that the sides are diagonal to the board, then by sliding along pins elevated sufficiently to allow enough clearance for the under camber of the ribs. Do not sand this piece down as yet. The shaping of the leading edge is done after the cap-stripping is in place. Now some 1/4" x 1" stock is sanded so as to taper properly in thickness toward the tip end. This is the trailing edge and is pinned on the board with the sharp edge touching the board while the forward edge is elevated slightly. In pinning the leading and trailing edges to the board, refer to the graph of the Göttingen section on Plate 1. The zero line corresponds to the surface of the board and the leading and

WE'VE GOT THE WINNERS!

Wing Span 49". Length 31"

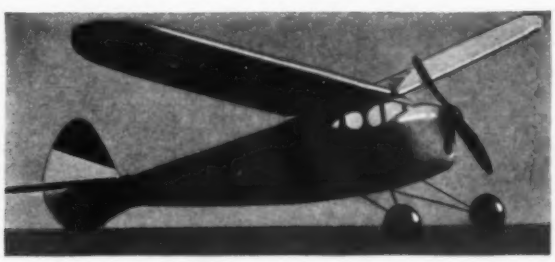
Take a look at the DIAMOND DEMON, modern from fin to cowl. Unique triangular fuselage construction that features real "beef" without excess weight, and amazing simplicity of construction. High lift wing section, shock-proof landing gear, hefty motor mount are more of the Demon's features. Be the first in your vicinity to own this swell performer. Complete kit, full size plans, all dopes, wood, cement, and airwheels.....$2.95

And we proudly present the new BAY RIDGE DIAMOND DEMON, our latest record breaker. Flown in her first contest on March 19, she set what is believed to be a new NAA record for average of three flights, her longest hop being 8:12, out-of-sight. An Ohlsson '23 powered the DEMON and she proved the outstanding performer of the day in the small motor class. In the same contest, our show room model of the THERMAL MAGNET, with a Dennymite in her nose, took second in the big motor class, while BAY RIDGE MIKES took third and seventh in the small motor group. We've got the winners—and watch them perform for you in the forthcoming contests.



Wing Span 6'. Length 50"

And here's the THERMAL MAGNET, six feet of outstanding performance, with super modern lines and record-making reputation. Complete kit, all wood, printed sheet, full size plans, carved prop, less airwheels and motor, for **$4.95**, postpad. Deluxe kit with 4½" airwheels and covering silk, **$7.50** postpaid.



Wing Span 48". Length 32"

Our other winner, BAY RIDGE MIKE, has proven its ability in everything from the Nationals to date. Four feet of flying wonder, easy to build and a sensation to fly. Complete kit, **$2.50** without airwheels, or **$3.50** for deluxe kit which includes airwheels, covering silk and finished propeller. All postpaid.

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⅛x¼	.4 for	.10	
¼x¼	.3 for	.14	
¼x1	.2 for	.15	
3/16x3/16			
	.8 for	.25	
3/16x½			
	2 for	.10	
3/16x1	2 for	.19	
⅛x¼	.6 for	.25	
½x½	.4 for	.25	
¼x1	.3 for	.25	
⅛x⅜	.3 for	.25	
⅜x½	.3 for	.27	
¼x1	.1 for	.18	
1x1	.1 for	.25	

BAMBOO PAPER
24x36 ...each .05

Gas Model Cement
Clear Dope
Colored Dope and Thinner
¼ pint can... .35
1 pint can.... .60

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1/16x3x12... .38
1/32x3x12... .15

ALUMINUM RIVETS
⅛" dia. doz .05

GAS MODEL BALSA
36" or 18" length of gas model balsa can be had. See our regular list of model supplies below. Please mention its use.

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1/32x2	2 for	.15
1/16x2	2 for	.17
3/32x2	2 for	.20
1/8x2	...2 for	.23
2/16x2	...2 for	.27
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Double the price for 3" widths.

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12"	.65
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3½" pr.	$1.50
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5 Ft. Lengths

1/32x3/16		
	1 for	.04
¼x¼	1 for	.05
3/16x3/16		
	1 for	.07
3/16x½		
	1 for	.10
3/16x1	1 for	.15
3/16x3	1 for	.40
¼x¼	1 for	.09
¼x½	1 for	.14
¼x1	1 for	.17
¼x3	1 for	.45

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½x½ per ft. .15

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3½" pr. $1.50
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8x10 each.... .07

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5 Ft. Lengths
1/16 dia. .10
3/32 dia. .15
⅛ dia. .25

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	.25 for	.05
1/16x3/16		
	.20 for	.05
1/16x¼		
	.15 for	.05
3/32x3/32		
	.30 for	.05
3/32x⅛		
	.10 for	.05
⅛x⅛	30 for	.05
⅛x3/16		
	.14 for	.05
⅛x¼	.12 for	.05
3/16x3/16		
	.8 for	.05
¼x¼	6 for	.05
¼x⅜	4 for	.05
¼x½	4 for	.05
½x½	2 for	.05

16" Sheets

1/32x2	6 for	.09
1/16x2	6 for	.10
3/32x2	6 for	.13
⅛x2	6 for	.13
3/16x2	3 for	.09
¼x2	3 for	.10
½x2	2 for	.10

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½x⅜x6		
	4 for	.05
⅝x1x7	3 for	.05
3x1x8	2 for	.05
¾x1¼x10		
	1 for	.04
1x1½x12		
	1 for	.06
1x2x18	1 for	.12
2x2x18	1 for	.20
1¼x2x18		
	1 for	.15
1½x2x18		
	1 for	.18

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1x3	1 for	.15
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4 oz.	.20
½ pint 8 oz.	.35
1 pint 16 oz.	.60

WHEELS PER PR.

Size	Brch.
½"	.01
¾"	.02
1"	.03
1½"	.04
1¾"	.07
Balsa	Cele.
1"	.05 .07
1½"	.06 .09
1¾"	.09 .15

FREE bushings with balsa wheels.

BROWN RUBBER

1/16 flat	
	.20 ft. .05
⅛ flat 17 ft.	.06
3/16 flat	
	12 ft. .07

WIRE

010 & 020	
5 ft.	.02
028 & 034	
3 ft.	.02

REED
1/16 dia. 3 ft. .02
⅛ dia. 3 ft.....03
doz.

DOWELS
1/16 dia. x 12 doz. .05
⅛ dia. 18" 4 for .05

ALUMINUM TUBING
1/16 dia. per ft. .07
3/32 dia. per ft. .07
⅛ dia. per ft. .08
3/16 dia. per ft. .10
¼ dia. per ft. .12

SHEET ALUMINUM
010.... 6x6.....06
12x12..20

DUMMY RADIAL ENGINES
1⅛" .10
2" .15
3" .25

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4x5 .03
Model pins per pk. .05
Dome brushes small .03
large .05
Nose plugs each .01

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1/16x1/4x15 6 for .05
1/16x12" round bamboo 6 for .04
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Small or large, doz. .01

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1/16" dia. shaft .85

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Sheet containing 4 sets of American, French, English and German. Sheet .06
All colors

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3 for.....05

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5" .05
6" .07
7" .10
8" .12
10" .20

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Small per doz .10
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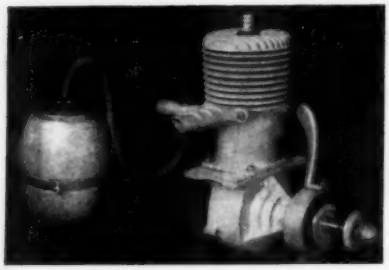

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- in construction
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GIANT "ORIOLE"

Prefabricated de luxe kit, less motor and propeller	**$21.50**
Dry kit, less wheels, dope and cement	**14.75**

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trailing edges have the same relation to the board as they have to the zero (chord) line. It is assumed that all the ribs have been cut out by now. They are of 1/16" plus medium hard sheet balsa. Each rib is cemented in its proper place, (all except the four center ribs which are put in later). Allow this "skeleton" frame to dry thoroughly, then remove it, set aside, reverse the wing half plan sheet and trace the outline from the other side. This may be accomplished easily if the paper is translucent, or it may be done by means of pin holes pricked through the paper at important points. Then connect this on the blank side, thus producing a perfect replica. A second wing half is now made. Thus the left and right wing halves are produced.

Another method of making the wing halves requires no pinning down on a board but does call for a great deal of accuracy. It is as follows: Make the main spar of 1/8" hard sheet balsa. Mark off the positions for the various ribs on the spar. Make a cardboard triangular template containing the angle that the ribs make with the spar. Then starting with the larger ribs, glue each rib to the spar at the right station using the template to determine the correct angle the plane of the rib makes with the plane of the spar. Use a pin through the rib and spar near the joint to preserve this angle till the joint is dry. When finished this should appear like some variation of a fishbone skeleton. Both halves are made. When completed the leading and trailing edges are glued in place. The leading edge is put on first. This will line up the trailing edges of the ribs.

Which ever way the halves were built these steps follow: Put in the spars (method 1) or the remaining rear spar (method 2). The straight taper of the spars makes them easy to lay out. At the bottom center of Plate 1 a pattern is shown for some 1/32" sheet plywood root-reinforcing pieces. Two sets of two each are made. Two will fit over the main spar and the other two over the rear spar. They are glued in place and bound tightly with ribbon 1/2" wide cut from silk (gas model type) and coated with a cement skin. A piece of 1/8" steel wire 6" long is bent into a shallow "V," as shown on the right middle of the "Wing" plate. This is set into a groove cut for it on the inside leading edge. Coat this well with cement. During the joining of the wing halves and the reinforcing of the root it is important to check the dihedral which should be 11" in each tip. Apply cement skins over all the joints at the root and then insert the remaining four center ribs. The wing tip edging is cut from 1/4" sheet balsa and may be scaled up from the drawings by laying off the dimensions six times with dividers.

The wing is cap-stripped with 1/16" by 3" medium sheet balsa. This method is very simple, and is worked from the leading edge back. It is shown diagrammatically in the lower right corner of Plate 1. The cap-strip pieces running lengthwise over the top portions of the ribs are 1/16" x 5/16". They are glued down after the main cap-strips are in place. Now the wing is trimmed down at the leading and trailing edges to conform to the airfoil shape. It is then sanded very smooth.

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1 Man Model—PCC1, (Illustrated above) Length 10 ft. Weight 20 pounds. Complete Kit—Price only..$10.00
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18" Balsa Planks

⅛x⅛	....2 for 5c
1x1	.....1 for 5c
1x2	.....1 for 9c
2x2	.....1 for 16c
2x3	.....1 for 22c
2x6	.....1 for 38c
3x6	.....1 for 72c

NOSE BLOCKS

1x2x1	.....1c
2x2x1	.....2c
2x2½x1	.....3c
3x3x1	.....4c
3x3x2	.....7c
3x3x3	.....9c
5x5x2	.....22c

18" BALSA

1/16x1/16	100. 5c
1/16x⅛	35 for 5c
1/16x3/16	18. 5c
1/16x¼	15 for 5c
3/32x3/32	30. 5c
⅛x⅛	30 for 5c
⅛x3/16	12 for 5c
⅛x¼	10 for 5c
3/16x3/16	8. 5c
¼x¼	6 for 5c
¼x½	3 for 5c

18" Balsa Sheets

1/64x2	6 for 10c
1/32x2	9 for 10c
1/16x2	8 for 10c
3/32x2	7 for 10c
⅛x2	.....6 for 10c
3/16x2	3 for 8c
¼x2	.....3 for 9c
¼x2	.....2 for 11c

2" sheets or 36" lengths, double the price; add 10c pack. charge for 36" lengths.

BAMBOO PAP'R

White....2 for 13c
Colors....2 for 15c

11 in. BAMBOO

1/16x¼ 12 for 5c
Shredded 80 for 5c

REED—for 3c

1/32-10ft. ¼-6ft.
1/16- 8 " ½-3 "

CEMENT

CLEAR DOPE THINNER

1 oz. 5c, ½pt. 30c
2 oz. 9c, pint 50c

Colored Dope

1 oz. 6c, ½pt. 35c
2 oz. 11c

Sheet Celluloid

2x6—2c 5x7—4c
14x17 .....15c

MICROFILM RUBBER LUBE WOOD FILLER

1 oz. 10c. 2 oz. 15c

WING AND TAIL LIGHTS

5/16"....3 for 8c
9/16"....3 for 10c
11/16"..3 for 12c

Gas Model Silk

super quality per yard..... 40c

BROWN RUB.

1/16 sq. 15 ft. 5c
⅛ flat ....15 ft. 5c
3/16 flat 12 ft. 5c
Skein 225 ft. 70c

Alum. Tubing

1/16 .....6c ft.
3/32, ⅛ ....7c ft.
3/16, ¼ ....9c ft.

PROPELLERS

Balsa Paul-O-Mach. Cut Wins

5"	4c 7c
6"	5c 11c
7"	6c 16c
8"	7c 20c
9"	8c 26c
10"	8c 27c
12"	10c 35c
14"	13c X
15"	X 48c
16"	15c 72c

ALUM. WHEELS

1"	pr..... 8c
1⅛"	pr..... 9c
1⅞"	pr..... 13c

Sheet Aluminum

.003 ....sq. ft. 10c

ALUM. LEAF

10 sheets for 5c

TISSUE, AA

All col., doz. 10c
Silver ....ea. 4c
Superfine, wh. 3c

PROP. BLOCKS

½x ¾x 7	7c
½x ¾x 8	8c
⅝x1 x8	3—5c
¾x1¼x10	3—8c
¾x1¼x12	2c ea.
1 x1½x12	5c ea.
1 x1½x13	6c ea.

WHEELS per pr.

Birch	Blue Cola
½ .01	.03
¾ .02	.04 .05
1 .03	.05 .07
1½ .04	.07 .10
1⅞ .06	.10 .16
2	.12 .20
3	.15 .30

Add 10% on all orders for postage. 20% Foreign. Send for other price list

TriBoro Model Supply Co., Dept. A1

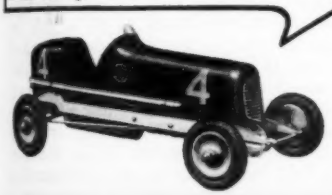
3521 32nd St. Long Island City, N.Y.

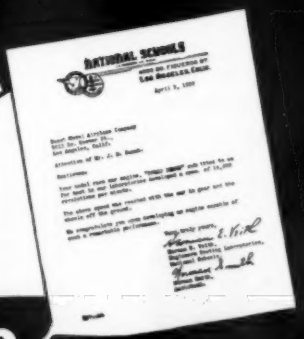
5,000 MILES WIDE-OPEN RACING

SPEEDWAY Race Car Engine
Assembled $14.00
Kit 11.85

This supreme achievement in model engineering, certified and recognized by racing experts is final proof of the stamina and performance possible with the SPEED DEMON race car and the SPEEDWAY engine.

CERTIFIED ENGINE SPEED 14,000 R. P. M. Official Strobotac Measurement after 5,000 miles racing.





Congratulations by Red Shaffer, famous Indianapolis racer, to Howard Broughton, chief engineer, after this supreme achievement of the model industry.

SPEED DEMON KIT (Less engine only) $16.50 Complete Plans $1.00

BUNCH MODEL AIRPLANE CO.
5009 So. Hoover St. • Los Angeles, Calif., U.S.A.

Elevator and Rudder

The tail surfaces should be built on full size drawings that can be easily made by scaling up the views on Plate 2 four times the size shown or by following the dimensions. As reference lines, use the centerlines of the main spars (elevator and rudder). On these reference lines lay off the distances between the ribs and through these points draw perpendiculars on either side. Along these perpendiculars lay off the true distance from the reference lines to the edges of the surfaces. Connecting these points will give the correct outlines. The inner edge of the leading and trailing edges and tips may be obtained in the same way. If dividers are used, measure the distance wanted on Plate 2 and lay it off four times from the reference line. This will make it full scale.

From these full size plans transfer the leading and trailing edge and tip shapes onto 1/8" medium sheet balsa. This may be done with carbon paper or by means of a pin, pricking holes through the outline at intervals into the wood. Then remove the paper and connect the points with a French curve and retracing the outline. Now cut out the leading edge pieces and pin them over the plans on a board, just like in the wing construction. The trailing edge pieces are cut into a "V" shape and pinned down. Glue all the pieces that make up the outline as they are pinned onto the board. The main spar is then cut out and mounted. The ribs are easily made by scaling up the graphs to four times the size shown. The same method is used here as that employed in obtaining the tail outlines. When all the ribs are cut (each rib is in two pieces), they are glued in place. When dry the tail is cap-stripped like the wing. It is advisable to join the rudder and elevator before cap-stripping them. Make this joint very strong. The various minor details such as filletting and making the rudder tab are clearly shown on Plate 2 and require no further explanation here.

Next month the remainder of the construction of the "Dolphin" shall be published. Until then—Happy Landings.

Air Ways

(Continued from page 26)

PLANE NEWS some time ago. The model is equipped with everything included on the real plane; such as, joysticks, machine gun trips, rudder bar, spark and throttle levers, fire extinguisher, etc.

One of the most important things which Guernsey has found out while working on this model is the correct manner of taking pictures. The essence of his success lies in this statement: "I always made the mistake of taking pictures in strong sunlight and the heavy shadows were sometimes confusing." The picture of this model was made on a cloudy day. Guernsey has found the secret of success: On sunshiny days there is too much contrast between highlights and shadows—the highlights usually are so bright and the shadows so dark that the details are entirely blotted out.

We hope that photographers who wish to submit pictures to "Air Ways" take particular notice of these comments. A

FRONT WHEEL GEAR DRIVE—UP TO 60 M.P.H.

FLASH! The tremendous demand for TRACK-MASTER from Customers and Dealers throughout the U. S. far superceded anything we ever dreamed of. "Rush" orders came streaming in. We were literally astounded at the reaction to our MAY "Introductory" offer for this outstanding masterpiece in Race Cars. Every mail brings new customers from North, East, South and West. We have been operating on a 24-hour basis in order to fill these orders.

We immediately enlarged our production facilities and increased our personnel. New factory improvements enables us to speed up production at a lower cost, thereby bringing TRACK-MASTER to you at a new standard retail price. In addition to a substantial savings—TRACK-MASTER comes to you PREPAID.

DEALERS! Effective June 6th, 1939 you will discontinue former standard price of $14.85, for the new low $12.60.

For list of Kit parts see MAY issue M.A.N. page 63.

Be the first in your community to own a TRACK-MASTER

REMEMBER! TRACK-MASTER challenges all other cars for THRILL—SPEED—PERFORMANCE.

IMPORTANT: TRACK-MASTER will be shipped to all parts of the world subject to war risks. Foreign add: $1.00.

Hi-speed fly wheel $1.25 pp. | Full size plans $1.00.

RUSH YOUR ORDER NOW

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'TRACK-MASTER'
America's Leading RACE CAR

Engineered for Speed and Durability

TRACK-MASTER is the latest and best equipped race car on the market. Built of finest materials obtainable. Precision parts. For any 1/5 to 1/2 H.P. motor. Quickly assembled.

SPECIFICATIONS: 13" wheel base. 8" tread. Length over all 19½". Gear ratio 2 to 1.

Complete kit with BOSTON BEVEL GEARS (Less motor and fly wheel)

12.60

Prepaid Immediate Delivery

POLISH FIGHTER—GULL WING 48"
SCALE GAS MODEL ONLY

$2.50

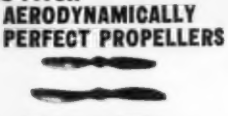
Add 15c for handling and postage.

FREE
10" hand carved Special laminated prop. with each kit.

- FINISHED CUT RIBS
- COLORED INSIGNIAS
- SAW CUT NOSE PIECE
- LARGE CAN OF CEMENT AND DOPE
- BOTTLE OF COLORED DOPE
- SPECIAL MEXICAN MAHOGANY MOTOR MOUNTS
- 2 LARGE SHEETS OF BAMBOO PAPER
- LIBERAL SUPPLY OF STEEL WIRE AND HARDWARE
- LARGE FULL SIZE PLANS

DEALERS WRITE

TRU-PITCH AERODYNAMICALLY PERFECT PROPELLERS



LAMINATED GUMWOOD

10"	$.40	$.25
11"	.45	.25
12"	.45	.30
13"	.50	.30
14"	.50	.30

TREXLER AIRWHEELS

1¼"	$.40	3"	$1.25
2"	.50	3½"	1.50
2½"	.60	4½"	1.75

TRU-PITCH PROPELLERS, 2188 PITKIN AVE., BROOKLYN, N. Y.

PLANE TALK!
Skyway Stocks Gas Model Supplies

FREE with all purchases over $1.00 your choice of: (1) Model Water Sprayer. (2) Model Builder's Knife. (3) Choice of 2-20" Model Plans—Curtis, Heath, Boeing, Driggs.

18" Balsa Planks

⅛x1½	2 for 5c
1x1	1 for 5c
1x2	1 for 9c
2x3	1 for 16c
2x3	1 for 22c
2x6	1 for 38c
3x6	1 for 72c

NOSE BLOCKS

1x2x1	1c
2x2x1	2c
2x2½x1	3c
3x3x1	4c
3x3x2	7c
3x3x3	9c
5x5x2	17c

18" BALSA

1/16x1/16	100. 5c
1/16x⅛	35 for 5c
1/16x3/16	18, 5c
1/16x¼	15 for 5c
3/32x3/32	30, 5c
1/8x⅛	30 for 5c
1/8x3/16	12 for 5c
1/8x¼	10 for 5c
3/16x3/16	8, 5c
¼x¼	6 for 5c
¼x⅓	3 for 5c

18" Balsa Sheets

1/64x2	6 for 10c
1/32x2	9 for 10c
1/16x2	8 for 10c
3/32x2	7 for 10c
¼x2	6 for 10c
3/16x2	3 for 8c
¼x3	3 for 9c
¼x2	2 for 11c

3" sheets or 36" lengths, double above prices; add 10c packing charge for 36" lengths.

PROP. BLOCKS

½x⅝x5	7—5c
½x⅝x6	6—5c
⅝x1x8	3—5c
¾x1¼x10	2—5c
¾x1¼x12	2c ea.
1x1½x12	5c ea.
1x1½x15	6c ea.

WHEELS per pr.

Bresh	Bisa	Celu
½ .01	.03	
¾ .02	.04	.05
1 .03	.05	.07
1¼ .04	.07	.10
1½ .06	.10	.16
2½	.12	
3	.15	.30

Alum. Tubing

1/16	.6c ft.
3/32	.7c ft.
3/16, ¼	.9c ft.

PROPELLERS

Balsa	Paul-O-Mach. Cut	Wina
5"	3c	.7c
6"	3c	.11c
7"	4c	.15c
8"	4c	.19c
9"	5c	.23c
10"	6c	.27c
12"	8c	.31c
14"	12c	.X
15"	X	.48c
16"	15c	.72c

ALUM. WHEELS

1" 6c pr.	1¼ 9c
1½" pr.	.12c

M & M WHEELS, PAIR

1¼, 1½, 1¾	50c
1¾, 2, 2¼	60c
Gas. Mod. 2¼	90c
3½ 1.50, 3½	2.75
4½	2.75

Sheet Aluminum .003 sq. ft. 10c

TISSUE, AA
All col., doz. 10c
Silver..... ea. 4c
Superfine, wh. 5c

Bamboo Paper
White 5c each
Colors 2 for 15c
Model Pins 100 5c

WOOD VENEER
20x30.....2 for 19c
Masking Tape 5c

GAS FUNNEL with filter.....30c

TOGGLE SWITCH
50c value 30c

SPRAY GUNS
Sm. 89c, Lge. $1.19

CEMENT CLEAR DOPE THINNER
1 oz. 5c, ½ pt. 30c
2 oz. 9c, pint 50c

Colored Dope
1 oz. 6c, ½ pt. 35c
2 oz. 11c

MICROFILM RUBBER LUBE WOOD FILLER
1 oz. 9c, 2 oz. 14c

Sheet Celluloid
2x6—2c 5x7—4c
14x16 ..... 15c

RITZ GAS PROPS
9", 10", 11"..$.40
12" and 16".....50
18" 1.00

Gas Model Silk
Heavy Qual. yd. 40c

CONDENSERS
The best.....20c

BROWN RUB.
1/16 sq. 15 ft. 5c
⅛ flat 15 ft. 5c
3/16 flat 12 ft. 5c
Skein 225 ft. 1/16 3 5 c, ⅛—60c, 3/16—85c

5 SHOT BALSA

⅛x⅛	.20 for 20c
⅛x3/16	.12 20c
⅛x¼	.10 20c
3/16x3/16	.8 20c
¼x¼	6 20c
¾x⅛	3 20c
⅜x⅜	2 20c
½x½	2 20c

Sheets cost 4 times 18" prices. Add 20c pack. charge on 5 ft. lengths.

DUMMY RAD. ENGINE (Celu.)

1½" dia.	.08
2" dia.	.12
2½" dia.	.14
3" dia.	.17

THRUST B'GS.
½ doz. sm. 5c; ½ doz. lge. .7c

GAS MOTORS P.P.

Ohlsson 23	$16.50
" Gld.Seal	18.50
Brown D....	12.50
Brown B....	21.50
Syncro Ace	9.95
Forster	17.75
Dennymite	17.85
" Stand.	15.85
Bunch Mdg.	9.50

Write us for motor-Trade-Ins

WIRE

.014	6 ft. 2c
.020 .028	6 ft. 3c
.034 .040	6 ft. 6c
.049, .063	3 ft. 5c
3/32"	5 ft. 15c
⅛"	5 ft. 25c

NOSE PLUGS

½"	.8 for 5c
⅝"	.6 for 5c
⅞"	.4 for 5c
1"	.4 for 5c

AUSTIN FLIGHT TIMER
0-2 min. $1.25 ea.

CHAMPION SPARK PLUG
⅝ or ½ 65c ea.

SMITH IGNITION COIL
Worlds best $2.50

MODEL KNIFE ea. 10c

FREE POSTAGE on all orders in U.S.A.
Add 10c for packing cost on all orders.
DEALERS: Send for wholesale price list.
PLASTIC BALSA Large can.....23c

For U.S. possessions, Canada or foreign countries add 15% on orders over $1.00; under $1.00 add 15c. *Send 5c stamp for 1939 catalogue*

SKYWAY MODEL AIRCRAFT SUPPLY CO.
383 Seventh Ave., Dept. M, Brooklyn, N. Y.

window-shade was used as a background for this picture, and this is an excellent idea.

Now that fine weather is here hydros will be popular with those who live near any body of water. Picture No. 2 shows Andrew Petersen's fuselage job. Peterson lives at 2817 Michigan Avenue, Los Angeles, Calif. You will note that the hydro gear is of the three float type. The picture shows the model resting on the surface of a lake in a park near Los Angeles. The hydros are serviced with a rowboat when flown from the lake. This ship is powered with about sixteen strands of 1/8" brown rubber and has a fast takeoff and powerful climb. One of the greatest problems in flying hydros is keeping the model dry. Unless perfect landings are made, the wings, body or other parts of the ship are bound to become wet. Max Lipshultz, who is Petersen's flying companion, also has a similar ship. Petersen says that one minute flights are not uncommon, in spite of the fact that the models are quite heavy due to the added weight of the pontoons and the extra dope which must be put on the surfaces in order to keep them water-tight.

Model airplane building is not confined to young men, by any means; this sport embraces many adult and mature fans. One of these is M. O. Holmes, who is an eye specialist at Elkland, Pa. His hobby is building planes and he recently finished the DeHavilland Moth which is shown in picture No. 3. It is suspected that this ship is a gas model, though Dr. Holmes does not tell us whether or not it is. Nor does he speak of any flights he has made with it. The wing span is 63 1/2 inches. The wings, as on the big ship, fold back against the fuselage; the leading edges being held to the fuselage by spring tension, when they are in flying position. The landing gear has a special compression spring arrangement to absorb shocks.

Stanley Orzeck of 1 Morton Street, Framingham, Mass., is shown in picture No. 4 with his eight foot sailplane, which he recently designed. It is composed of cantilever gull wings mounted on a monocoque fuselage. The elevator is set rather high in the rudder in order that it will not be affected by the wing wash. The model weighs about one pound complete, and has an exceptionally flat glide. It has made a number of flights of ten minutes. However in February, on one flight at Framingham Airport, it remained in the air for fifty minutes, landing five miles away. The altitude attained was about 2000 feet. This flight was made on a cloudless winter day, from a fifty foot launching, over a flat terrain. Those who understand the principles of soaring will understand how remarkable this is.

Picture No. 5 is a typical scene in many American homes. It shows Master M. Lunt who lives at Valleyhead, Concord, Mass., busily engaged in his workshop. He is an ardent model fan.

Richard Crawford of Rensselaer, N.Y.,

PREPARE NOW FOR THE NATIONALS
July 6th-9th

R.F.D. 1, % H. Lemley, says that one of the problems that faces many model builders is what to do with their scale model planes after they are built. However he says he has found a solution: He builds scenery around his models and places them in dramatic and realistic positions so that the ships represent various phases of action which take place in flying. Picture No. 6 shows three of his carefully built scale model Fokkers flying in formation; that is, they give this appearance. They have been carefully posed in the positions shown. Below them you will note what appears to be the tips of puffy white clouds, which actually are not clouds at all but a carpet of cotton placed on the floor and pulled up in bunches to represent clouds. The tableau is especially well arranged and is most realistic.

This is only one example of Crawford's genius. He has sent us a number of other pictures of airport, dog-fights, planes falling in flames, etc., which were impossible to publish because of our limited space. He says anyone can take these pictures provided they are ingenious enough to make the background. Super XX Panchromatic film should be used with an exposure of one-half to one second.

Model News From Other Countries

Ireland

We have news from Ireland this month, which is unusual as very little news comes from this country. However James M. Wade of "Maebert," Albert Road, Sligo, has taken pity upon us, for he also has noticed that Ireland is not well represented in MODEL AIRPLANE NEWS. Mr. Wade says he lives in the southern part of Ireland, which is not very well advanced in model plane work; though in the northern section, under British rule, there is considerable activity. He sends us picture No. 7 which shows one of his planes and his mascot. The plane was built about eighteen months ago and is still flying well; never having had a serious crash. At present, he says, it is fitted with skiis, taking off and landing very well on the frozen snow. The ship has a 32 inch wing span and swings an eleven inch prop. The average duration is from 65 to 70 seconds without thermals. However it has flown for five minutes. Wade tells us that he is the only model builder in his town, which has a population of 13,000. "This shows how backward this community is in this sport," he says. After building planes for two years he now has forty different models, mostly of American designs.

Spain

In spite of the holocaust which has taken place in Spain, model builders, it appears, have found time to follow their hobby. Picture No. 8 was sent to us by the Aero Club De Sabadell Y Del Valles, Rambla de la Republica 71, Sabadell (Barcelona), Spain, the secretary of which is E. Garcia Lajo. The president is J. Estany. In the picture a group of the club members are shown with their gliders. In the background is a part of what is a very tall tower. The model fans

IDEAL AMERICA'S NO. 1 HOBBY HOUSE GIVES YOU

CHIPSHAPES

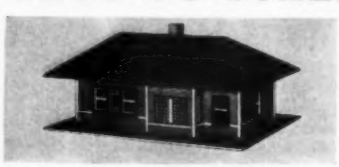
Reg. U.S. Pat. Off.

A Fascinating Hobby You Will Enjoy!

25¢ Is All It Costsfor COMPLETE KITS! postage 10c extra per kit

Got a pocketknife and a little patience? That's all you need—no carving skill is needed to whittle these remarkable life-like figures. They make excellent decorations for book ends, ash trays, mantel, radio, lamp bases, and even as wall plaques. Each figure stands approximately five inches high. Each kit contains a block of selected wood, with the figure printed in outline. A completely moulded plastic figure is also supplied to serve as a guide in whittling. This moulded pattern may also be painted, thus making a pair of identical figures from each set. Choose *your* CHIPSHAPES Kits from these 6 characters: Monk, Tramp, Sea Captain, Old Woman, Sailor, Russian Peasant.

TRUE-TO-SCALE "HO"—BY IDEAL



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ALL KITS COMPLETE WITH: Sturdy, interlocking die-cut boards, realistically painted; chimney brick paper; printed celluloid windows; full size plan; directions.

HO Gauge Water Tower →

25¢ ea. postage 10c per kit

IDEAL'S Moulded Fuselage Squadron

COMPLETE REPLICA KITS 25¢ ea. BY MAIL, 10c EXTRA

ALL KITS CONTAIN:
Moulded Fuselage • Metal Propeller
Painted Balsa Wings
Moulded or turned engine nacelles
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Cement • Finished Wheels
Full Size Plan • 11-12" Wingspan

Grumman Fuselage

BELL AIRACUDA • REARWIN SPORTSTER • SEVERSKY TRAINER

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for entries in this year's

GAS CONTESTS

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(Motor unit is additional)

Here's just what you've been waiting for!

⅞" Bore Motor for SPEED;

14" Propeller for FAST CLIMB.

All of these features will increase your chances to get into a RISER for a long flight. Total weight of KINGFISHER and power unit—40 oz., giving a wing loading slightly under 10 oz. per square foot.

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Another new miniature

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42" span.

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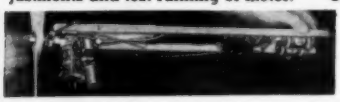

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—merely the most startling, fascinating aerial artifact in the cultural art of flight—a rotary saliplane.

GI-RO demonstrates the natural ultimate speed, grace and flying agility of rotary wings. Rockets to a hundred feet or higher. It's nature's own design for mechanical flight in blustery weather.

GI-RO is new—different—compact—dynamic.

Design original powered models. Here's your "one per cent of inspiration."

GI-RO suggests how revolutionary lightness, safety and speed may be realised with autogiros, helicopters or giroplanes of better design.

Whirling, soaring, seemingly alive in its uncanny response to fickle zephyrs, GI-RO is intriguing, thrilling, amusing and real sport; the center of interest anywhere.

See it! Fly it! Enhance your aeronautical "know how" in new spheres of flying fun.

GI-RO kit with rubber band catapult—small 20c. Large 50c—ready to fly $1.00.

SUN AERO CO.

954 Eddy St. San Francisco, Calif.

climb this tower and launch their planes from the top, with the result that some remarkable flights have been made.

The club members are most anxious to communicate with other clubs and model builders who would care to write them.

Germany

Mr. Hans Pfeil of Farberstrasse 1, Schlochau, Pommern, Germany, has been making a number of experiments with gliders. He has been using these to test the efficiency of various airfoils. Having seen the plans for the Grant Wakefield model in MODEL AIRPLANE NEWS, he was intrigued into building a soarer in which he used a Grant X-8 profile.

Many readers have wanted information concerning these airfoil's efficiency, so Mr. Pfeil's results may be of interest to them. The test plane had a length of 3 1/2 feet, span of 5 feet, wing chord of 6 1/2 inches and a weight of about .7 pound. On tests the average of this model was the best ever obtained for a soarer in this class; the glide angle being 20 to 1. This was not the average of one flight, but that of a number of flights over a given period of time. As most model builders know, in order to obtain a glide of 20 to 1 with a glider and not merely an airfoil, the L/D of the airfoil, or the efficiency factor, would have to be in the neighborhood of 1 to 24 at least. The Clark Y has an efficiency factor of 1 to 22, maximum. Thus it is evident that the X-8 airfoil not only exceeds the Clark Y in efficiency, but due to its unusually high camber, also exceeds it in the amount of lift it will develop at normal flying angles. This possibly explains the excellent results that model builders have been obtaining when they use this wing profile.

After the glider tests Mr. Pfeil constructed a gas model, using this airfoil and powered with a 1/10 horsepower motor at 5000 revolutions per minute. He says: "I tested the model and obtained nearly the same results as with the soarer." We hope Mr. Pfeil will continue to let us know of his experiments.

CLUB NEWS

Pennsylvania

Mr. Harry G. Vogler, contest director of the Boys Club of Pittsburgh, 4412 Butler Street, Pittsburgh, Pa., sends us a brief resume of the results of the recent Tri-State Indoor Championship Meet, held recently at the Hunt Armory.

With the opening of a progressive series of contests in the Tri-State Area, the first "gun" was sounded with an indoor meet for the championship of Eastern Ohio, West Virginia and Western Pennsylvania, on March 12, 1939. The entries were listed from all sections of the district covered, and the meet was under the direct supervision of Harry Vogler, Jr., N.A.A. Contest Director. An extremely large turn-out was registered, as well as an extra large assembly of spectators.

The meet was run on a progressive point system with one hundred points for first, seventy-five points for second, fifty points for third, twenty-five points for fourth, and ten points for fifth; in the four events scheduled. The events were Baby R.O.G.; Stick; Fuselage and Flying Scale. The winners in the three classes as under N.A.A. rulings, were:

Junior—John S. Harrington, Jr., Elm Grove, W. Va., American Legion Trophy; Sam Scuro, Pittsburgh, Pa., Megow's Award.

Senior—Ted Just, Johnstown, Pa., Aero Club of Pittsburgh Trophy; Willis Marlatt, Harrisburg, Pa., Scientific Award.

Open—Edgar Fulmer, McKees Rocks, Pennsylvania, Boys Club of Pittsburgh Trophy; Joseph Scuro, Pittsburgh, Pa., Comet Award.

A large number of contestants desired to know just when and where the next meet of any kind would be held, and to be advised of the coming of the same.

Kansas

Mr. Harold J. Borger of 509 N. Alleghaney Street, El Dorado, Kansas, writes:

"On February 26th the Kansas State Board of Contest Directors met at Wichita, at which time a number of events of interest to all Kansas model Builders was decided.

"Probably the most important part of the meeting was the scheduling of dates for model meets in Kansas this summer, as follows: State Gas Model meet at Wichita, June 4th; Invitation Rubber Powered Model meet at Topeka, June 11th; State Rubber Powered Model meet at El Dorado, June 18th; Orr's Book Store Special Kit contest at Wichita, Aug. 13th; and the Metro Open Rubber and Gas meet at El Dorado, Aug. 27th. Because of the close proximity of Kansas City, Missouri, it was decided to invite model builders from that city to all of the Kansas State meets with one restriction, namely: Kansas City model builders would not be eligible to win the perpetual trophies offered at these state meets, though they may compete for the other prizes the same as Kansas model builders.

"N.A.A. rules will be followed through-

$11.75
Adaptable to all 1/7 H.P. Engines

WASP SPECIAL

GAS POWERED RACE CAR

Think of it—this fourteen-inch reproduction of Pat Cunningham's famous midget racer with speed enough to meet all competition—for only $11.75. The Wasp Special is adaptable to all 1/7 H.P. engines—Phantom, Hi-Speed, Ohlsson, etc . . . or you can buy the Wasp kit together with Bill Atwood's new scientifically converted Phantom engine, complete with coil, tank, condenser and fly wheel at the special combination price of $19.50. Midget Wasp Specials are now being raced all over America—you don't need an airport for these cars—they operate in a 15-foot or larger radius, on any street or suitable yard.

Order your Wasp today—it's easy to buy—easy to build. Clip and mail the coupon now.

5 to 40 M.P.H.
MEETS ALL COMPETITION

DUPLICATE
PAT CUNNINGHAM'S
FAMOUS MIDGET RACER

SPECIFICATIONS
Overall length, 14 in.; overall height, 6¼ in.; overall width, 7¼ in.; aluminum exhaust pipe with fittings; special snap-in battery carrier; front wheel friction drive (1.75 : 1 ratio) with machined steel clutch plate and fly wheel; prefabricated rear axle assembly ready to mount (adjustable to control car's direction); 2½ in. pneumatic tires and wheels; selected hardwood ash frame; body parts cut to shape with all holes drilled; paint; dope; complete full scale plans, and racing instructions.

CLIP THE COUPON

E-A-S-Y TO BUILD
ANYONE CAN COMPLETE IN TWO EVENINGS

WASP MODEL SUPPLY
4128 WADE AVE. VENICE, CALIFORNIA

Wasp Model Supply,
4128 Wade Avenue, Venice, Calif.
☐ Please rush prepaid one complete WASP SPECIAL race car kit as advertised, for which I enclose Money Order for $11.75.
☐ Send Wasp Special Kit complete with Phantom engine and coil, tank, condenser and fly wheel at $19.50.
☐ Send me full scale plans for Wasp Special race car. Enclosed is $1.00 Money Order which will be deducted from complete kit price if I order kit within 60 days.
California buyers add 3% Sales Tax. M4

Name_____

Address_____

out at the state meets and the rubber powered meet will have three events as follows: Wakefield, Junior, Senior and Open; Fuselage and Glider.

CONTESTS

Conrad Hansen Jr. of Hangar No. 13, Y.M.C.A., Beloit, Wisconsin, wishes to announce that they will hold a contest on May 21st. There will be a 25c entry fee and contest blanks may be obtained from Mr. Hansen at the above address. Prizes will consist of trophies, motors and merchandise. Other details are:

The Place: Rock County Airport, U.S. 51, 8 miles north of Beloit. The Event—6th Annual Southern Wisconsin, Northern Illinois Model Airplane Meet. The Events—(a) Gas Model, open to Junior, Senior, and Open. (b) Outdoor Commercial, Class C & D, open to Junior, Senior, and Open. (c) Outdoor Stick, Class C & D, open to Junior, Senior, and Open.

All under N.A.A. rules and regulations. Sponsored by Beloit Business Men, Beloit Commercial Club, Hangar No. 13 Jr. N.A.A. Chapter.

Missouri

Mr. Bob Sommers of the Stix, Baer & Fuller Company, St. Louis, Missouri, has sent us a schedule of this club's activities, which may be of interest to model builders residing in the neighborhood of St. Louis. The schedule is as follows:

May 13—Classes
  Forest Park, Gas Model Contest
May 20—Classes
May 27—Classes
June 3—Classes
  Forest Park, Fuselage Model Contest (with particular attention paid to weight instructions).
June 10—Classes
  Announcements of Eliminations
  Former champions to speak regarding the experiences at previous Nationals
June 18—National Eliminations at Parks Air College. Events: Cabin, Stick, Gas
June 24—Classes
  Preparations for Summer School
July 1—Farewell to National representatives
  Opening of Summer School Arts and Craft Division
July 5-9—Classes
  Nationals at Detroit
July 15—Classes
  Balloon Busting Contest—9th floor.
  Boat regatta—Forest Park
July 22—Classes
  Forest Park—Gas models, Gliders
July 29—Classes
  Trip to Airport—afternoon
August 5—Classes
  Final announcement on Mississippi Valley Contest
August 13—Eighth Mississippi Valley Model Airplane Contest
August 19—Summer School Closes
  Display of work
  Exhibit opens August 21st
August 26—Class work
  Boat regatta—Forest Park
  Gas contest—Forest Park: Perform-

THE BEST ENGINES

On The Market Depend For Their Performance On A

SMITH Ignition Coil

You too can benefit from their experience by replacing with the genuine article.

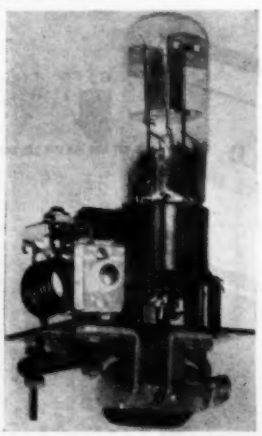
New primary terminals, mounting brackets and fibre strap, clip connectors on lacquered High - Tension wire, weight 2½ oz.

Price $2.50

Save weight and win the contest with our NEW Model LIGHTWEIGHT coil.
Beautiful Bakelite case and same high-tension leads as our other coils. WEIGHT 1¾ ounces. Price $3.00.
If you must have a big coil get our 5 ounce BIG SHOT that outperforms all others. $3.50.

RADIO Control

To fit the Ship you now have



Shown above is a complete receiver for use in the airplane constructed from our $9.00 kit which includes everything except tubes, batteries and escapement motor. Total weight including the tube as shown above is 5½ ounces. With all accessories the weight is 8 oz., which even the small ships can lift. Use this control for a timing mechanism or to shut off motor when desired, rudder control, spark control, etc.
Send for our new book giving all the dope on several different methods of control. Price 25c.

NATHAN R. SMITH MFG. CO.
1814 West 8th St., Los Angeles, Calif.

THE NEW
MERCURY
GAS MODEL BY SCIENTIFIC
See Page 39

ance Event
September 2—Class work

Mr. Sommers also gives us a list of ten lectures which will be given at club meetings during the season. This may act as a suggestion to other clubs as to "subjects for discussion" at their own meetings. The are:

1. The Story of the Stix, Baer & Fuller Model Airplane Club.
2. Contests and How to Participate.
3. Covering Odd Shaped Wings and Bodies.
4. The Importance of Correct Balance.
5. Microfilm and Indoor Models.
6. Proper Launching and Flying of Model.
7. Selecting the Correct Amount of Power.
8. Carving a Propeller and Its Relation to the Correct Power.
9. Getting the best results from rubber power.
10. Introduction to Gas Models.

The course will run for 10 consecutive weeks and then be repeated. The chief instructor will use any device he may choose to clarify his lecture. The lecture will begin at 9:45 o'clock, Saturdays, and will last no longer than 15 minutes.

The German Devil Gull

(Continued from page 34)

Build the Hamburg Gull-Wing Model

If you have glanced at the Hamburg Ha. 137 plans you will notice our new method of cross-sectional drawings. Working in close cooperation with MODEL AIRPLANE NEWS' Editor, Mr. Charles H. Grant and our model staff, we have evolved this new technique of simplifying fuselage and wing section accuracy. Template making now is the simple operation of cutting out the blackened squares shown on the drawing with a pair of scissors. Your template, accurate, handy and convenient, is then ready for applying to the fuselage at the proper points and exact shape is thus assured. We would have to search a long time to find a ship with the racy, sleek outlines of the made-to-order-for-modeling Hamburg Gull-wing Fighter. Cut out and sand the various components in the conventional manner. The wing is best made in four pieces cemented to the fuselage and to the landing gear section as shown. Several points should be emphasized for a realistic appearance: the tiny 'cockpit, the antenna posts at the wing-tips and the peculiarly-shaped rudder.

The wheels are easily made movable by constructing the pants in three sections viz: the center cut out section and the two outside covering plates. Attach the wheels by a single pin pushed through the covering plates and sand the assembly smooth and round. Take particular care on the liquid-cooling radiator underneath the fuselage. Paint in the various details with India ink following the plans exceptionally closely at this point. The letters D-I are painted on the port wing and the UXU, shown at the bottom of the drawing, is painted on the starboard wing. These may be cut out and glued to the wings. They are mounted just the reverse on the under-side of the wing. The boiling overflow tube just forward of the lower radiator is represented by a single straight pin shoved into the fuselage. String light silk thread between the various antenna points as shown and a small drop of ambroid will hold it at the points where it meets in mid-air, as shown on the top view. Color scheme in the vigorous shades shown in our fine painting on the cover is applied before assembly and detail painting. A straight pin will hold the propeller and spinner, constructed in four parts, in place and permit it to revolve when blown upon. A dummy pilot, painted black and carved from pine or balsa if you are highly skilled will enhance the model's appearance a hundred fold. Due to the balanced-type control surfaces they are easily made movable and when hung in flight in your den appropriate angles should be fixed on the ailerons and tail surfaces. And, above all, don't be afraid of originality. It is the essence of individuality and skill which marks the superior model builder.

A Word To The Wise

(Continued from page 21)

an emergency . . . take for example: your Wakefield model hits a newsreel truck on the take-off—the prop is splintered and the right wing-tip mangled . . . do you sit down and wail? . . . No, sir, you rebuild 'em quicker'n a flash . . . and FLASH . . . you place on the Wakefield team!

As soon as anyone becomes immersed in this hobby he's dependent upon mathematics . . . ask your kibitizing friends to figure the area of an elliptical wing . . . or plot the airfoils for your taper-wing gas job . . . heh, heh . . . then it'll be your turn to laugh.

So it's a lot you get from model airplanes!

Listen, here's more: gas models have taught thousands of fellows the mechanics of an internal-combustion motor . . . this one branch of the hobby also insists you familiarize yourself with electrical circuits, soldering and watch repairing (the last—the result of taking your timer apart!).

Once-Over-Lightly-Department: Overwhelm those who may criticize the hours you give to your model building work by citing the fact your interest in model aviation prevents you from holding membership in the "Let's Hang Around the Corner Boys" lodge . . . that it has taught you the essentials of economy (using one

SPINTRUE **RACING WHEEL**
for **MODEL RACE CARS**

SPINTRUE—All that the name implies. After extensive tests we have developed the perfect wheel and tire for gas powered model cars.
BALANCED—Perfect balance, no wobble, no vibration, no expansion, will give you 20% more speed.
TOUGH—Best grade rubber vulcanized by our special process insures you long life tires that can "take it."
REINFORCED—Two ply gum dipped cord prevent tire expanding off wheel at high speeds. Tested at 9000 R.P.M.
CRASH PROOF—Special aluminum alloy wheels accurately machined and strong enough to withstand all spills and crashes.
BEAUTIFUL—Black rubber tire with racing tread and polished aluminum wheel drilled for ¼ inch axle and bronze bushed on free running wheel.

Get the Best 3¾" Dia. $4.00 Postpaid Set of 4 Wheels and Tires

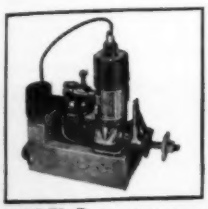
ACE MODEL SHOP 808 E. Colorado St. Pasadena, Calif.

FOUR GREAT NEW MOTORS

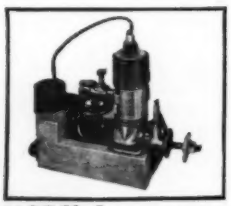
made by the world's largest builder of model gasoline motors

FEATURES OF THE BROWN LINE FOR '39

1. **TRANSPARENT Unbreakable FUEL TANK.** Easy to remove for cleaning—you can *see* the gas level.
2. **NEW IMPROVED TIMER** to give positive contact at the points. Easily adjusted and may be rotated from 180° to 360° to get it in any position. This new timer may be fitted to any of the old type motors if desired.
3. **NEW Micrometer NEEDLE VALVE** for precision adjustment of gas-air mixture. May be fitted to any of the old type motors if so desired.
4. **CHROME MOLYBDENUM CRANKSHAFT** on all models for smooth, balanced power.
5. **EVERY MOTOR GUARANTEED** for 60 days against defective materials or workmanship. All motors include spark plug, coil and condenser. Factory tested and fully guaranteed. Bore, ⅞". Stroke, 1". Weight (bare) 6½ oz.



MODEL B Special steel cylinder and piston *individually* fitted make this the last word in precision-made model engines. Cadmium plated. Mounted on skids ready for operation. $21.50 complete.

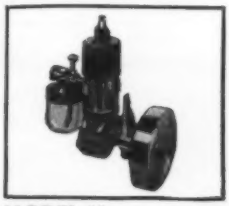


MODEL C Power, durability, and lightweight at a medium price. Block-tested. Aluminum piston and special rings. $18.50 complete.

$12.50 **MODEL D**

Here's a real champion at a *low price!* Precision-made by specialized machine tools in the completely equipped Brown plant. Includes the sound engineering advances built into other Junior Motors. Shipped ready-to-run.

JUNIOR MOTORS CORPORATION
2545 N. Broad Street, Philadelphia, Penna.



MODEL M For model cars and marine use. Aluminum piston and special rings. Balanced fly-wheel and positive contact timer. $16.50 complete.

Brown JUNIOR MOTORS

motor for three models) and neatness (a sloppy scale model never won yet) and most important of all is one little item which you mustn't overlook . . . the valued friendships most folks form during their model building careers.

There, that ought to hold 'em!

P.S. We almost forgot! You have a comprehensive working knowledge of aeronautics to which many a pilot would doff his hat!

Elements of Model Plane Radio Control

(Continued from page 8)

selector switch or a set of keys for various frequencies may be easily arranged. A triple winding input transformer, T1, figure 1, is used so that a microphone may be connected should this be desired. Audio tones could then be provided by blowing a whistle or pitch pipe of the correct frequency. This may sound a bit far-fetched, but who knows just what the accepted system of a few years hence may call for!

A switch on the volume control (SW1) serves to cut out the modulator tube so that its current drain will not add to the already rather high battery demand. Another switch (SW2) cuts out one R.F. channel so that only a single tube is in use. Still another switch (SW3) cuts off the high voltage supply leaving only the heaters connected for use when it would be inconvenient to await the heating of a tube.

All these switches may seem to add to the complications, but they do give the unit a versatility it would lack otherwise. As noted previously, the average constructor will use only those features necessary for his particular work.

Every effort has been made to cut the battery drain as much as possible. This is a further justification for the complicated switching arrangements. Another factor along this line is the use of the Raytheon RK33 tubes. These are double triodes similar to the RK34, but of lower power requirements, and also, of course, lower output.

A further endeavor in the line of current economy is the use of synchronous rectifier in the Vibrapack high voltage supply. This supply is complete except for D.C. filter, which is taken care of by a small choke and two miniature condensers. A convenience of this unit is the power switch which makes available four output voltages from 225 to 300 V. The lower range is convenient for tuning up and for nearby control work and should be used when possible to conserve battery power.

The R.F. circuits are quite similar to that of the transmitter described in Part One. Only the final amplifier tuning condensers (C1) and the antenna condenser of each channel (C2) are on the front panel. The oscillator condenser (C3) of each is at the rear of the chassis and is set by means of an insulated screwdriver. Once properly set, this condenser rarely needs to be changed.

It is necessary to use short, heavy leads from the transmitter to the power source,

FINISHED METAL STEAMER HULL

All metal steamer hull 37" long, 5¾" wide, 6" overall height. Completely finished hull with portholes, stringers for attaching deck, and holes for propeller shafts. Ideal for display or motor driven models. Due to slight rust, price is now while they last, $2.00 East and $2.25 West of the Miss. R., Postpaid.
MODEL PRODUCTS, 1678 President St., Brooklyn, N.Y.

MODEL SUPPLY HEADQUARTERS
for the NORTHWEST

We carry all the BEST GAS MOTORS, GAS KITS and SUPPLIES in stock for SAME DAY shipment. ORDER NOW!

GAS MODELERS!

Here's a tip on a combination that will "go to town" in plenty of contests this summer. We suggest the Aircraft ZENITH (last year's winner at the nationals) powered with the Dennymite Airstream engine. (Did you know that the Dennymite engine develops ¼ h.p. at 6000 r.p.m?)

Pictured at left Hal Jepperson and his Denny powered Zenith which on March 30, 1939 turned in a 35 min. flight on a 28 sec. motor run.

Zenith Kit, complete with liquids and covering	$ 5.50
Dennymite Airstream motor, DeLuxe	17.85
Standard	15.85
Special 16" Gas Prop, for Zenith	1.00
Flight Timer, weight 1 oz., clockworks type	2.00
Austin Battery Box	.50
Gas Model Props, 9" to 14", each	.50

Reg. $1.00 DICK KORDA, new only 39c
Order from us.
Please add postage at rate of 1 lb. per kit.
Brown Contest Rubber for Korda, ½c ft.
Special Korda Prop Blank, 30c.

All orders for $1.00 or more shipped postpaid SAME DAY.
We can fill your order for any kits or supplies advertised by Peerless, Comet, Megow, Surd, Berkeley, Denny, Aircraft, Scientific, Ohlsson, Modelcraft.

DEALERS We distribute all the above lines. Write on your letterhead for our attractive proposition.

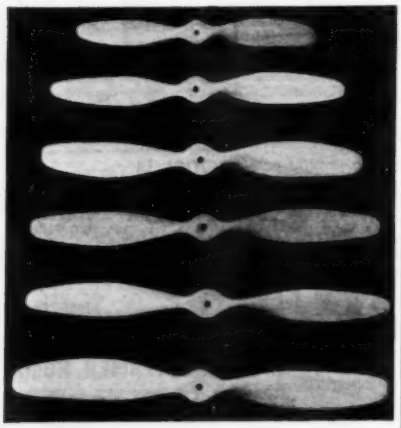
BILLETT'S MODEL AIRCRAFT DISTRIBUTORS 2548 Nicollet Ave., Minneapolis, Minn.

MODELCRAFT
★LEADING SUPPLY HOUSE OF THE WEST

LOOK!

GAS MODEL PROPS!
PRECISION BUILT AND BALANCED

25c EA.
ANY SIZE



Efficient? Well, the "Modelcraft Prop" won 1st, 2nd, 4th, 7th, 10th, and 13th place at Pomona, Calif. From the raw wood to the finished article with **mechanical precision,** adjusted to the most exacting requirements. Only through the perfection of this ingenious propeller machine are we able to supply super finished propellers at the unheard of price of 25c—stock up now—carry a dozen extras in your tool box. ***Complete range of sizes, 9", 11", 12", 13", 13½", 14".***

NEW FLIGHT TIMER
Adjustable from 1 second to 5 minutes. Weight ⅝ oz. Accurate, reliable. Complete to drilled mounting holes. Ready to attach wires and install in ship. **The first dependable timer made just for models.....** **$1.25**

See MODELCRAFT rubber driven and gas model ads elsewhere in this magazine.

MODELCRAFT
7306 S. VERMONT AVE.
LOS ANGELES • CALIF.

and they should preferably be connected directly to the battery terminals. The leads may be of the heavy stranded wire sold by auto supply houses. This large size is required in view of the fact that the current drain may run as high as 10 A. with both channels and the modulator in operation. Under such conditions a drop of 1/2 to 1 V. or more through the supply cable is possible if a small size wire is used, and such a drop will seriously affect the output of the transmitter.

Nothing need be said of actual construction, as individual preference and equipment at hand are controlling factors. Also details of layout may be seen from the photos.

Tuning and testing procedure are subjects which we need not dwell upon. Since this equipment *must* be operated by a licensed amateur, the operator will undoubtedly know the proper methods to follow.

A few words as to operating values may be helpful, however. The RK33 is designed to operate on 250 V. with one section *only* drawing a current of 20 ma. The oscillator will run at about 10 ma. when properly adjusted. The amplifier may be loaded up to 25 ma. or so at 275 V. for short periods of time without harm. When running at rated values, the power output will be around 2 watts, which, when connected to an efficient antenna system, will provide quite a good control range. If more power is required the RK34 should be used, but this of course means much higher battery drain.

In connection with the latter it should be noted that the Vibrapack used in this transmitter may be installed in the single channel transmitter described last month, in place of the A.C. power equipment. It will furnish sufficient power to operate the single RK34 at full output.

When used on dual channel work, two antennas are required. These should be separated by a fair distance, no less than ten feet or so. Data on antennas suitable for five meter control work is now being assembled for presentation in Part Three.

It is perhaps well to emphasize again that an amateur radio license (any class) is absolutely necessary to work this equipment. Failure to heed this warning will mean an unpleasant tangle with Uncle Sam, with the possibility of a stiff fine or imprisonment.

The next item to be taken up is an ultra lightweight receiver which is similar in circuit to that using an RK42 and an RK43 shown in Part One. The very latest in small tubes are the tiny Hytron "Bantam Jrs." which have 1.5 V. filaments for use on a single cell. Three of these, two triodes and a pentode, are used in the receiver shown in figure 2. A further contribution to lightweight is the U.T.C. "Ouncer" transformers which actually weigh about an ounce apiece. Use of these tiny lightweight components makes possible a three tube receiver weighing only eight ounces complete with the Sigma 3A sensitive relay. As shown in figure 3, the circuit is arranged to operate on short pulses from the transmitter. When a pulse is received the normal hiss of the super-regenerative detector is stopped, allowing an increase in

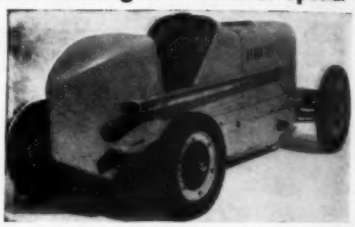
C. A. R.
Miniature Midget Racer

A REAL RACE CAR
– 35 to 60 M. P. H.
Designed by Prominent Racing Car Builders. 18" Wheel Base. Complete in every detail. All Metal Construction. Universal Motor Mountings. Simple to Assemble. Reasonably Priced only **$22.50**
IMMEDIATE DELIVERY

A. A. E. Co.
(Miniature Dept.)
Box 874 Inglewood, Calif.

THE NEW
MERCURY
GAS MODEL BY SCIENTIFIC
See Page 39

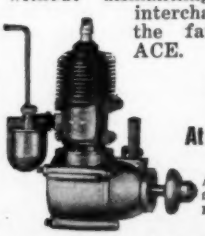
Announcing the "Meteor Special"



$21.50 less motor and flywheel
20 to 55 M.P.H.
The first all metal Miniature Race Car. **All parts completely formed, no cutting or filing necessary. All parts made in jigs and fixtures, assuring easy assembly of extra parts. Enclosed gear box drive, demountable rims on wheels, heavy duty tires. Tread 6½"; wheel base 12¾"; weight less motor and accessories 4¼ lbs.**
Assembly time not over 2 hrs.
Remit by postal money order.
ANY PARTS SOLD SEPARATELY. DESIGNED AND BUILT BY
B. B. KORN SPECIALTY MFG. CO.
7520 Melrose Ave. **Los Angeles, Calif.**

SYNCRO ACE SPECIAL

Here's the performance you've wanted. Designed to permit either vertical or inverted mounting without dismantling. Parts are interchangeable with the famous Syncro ACE.



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Brings a completely finished covering into the reach of every model builder, and a weight suitable for every model! Smooth as glass, shiny as a new automobile, stronger and more flexible than any covering you have ever used, and applied the same as ordinary covering with the ordinary nitrate glue that is sold at all model shops.

The brilliant opaque color can be had in red, orange, yellow, blue, grey, black and white. Mirro-Film is completely resistant to oil, gas, water, dope, glue, and lacquer thinner. The tension of the tightened Mirro-Film is always even, and your wing covered with Mirro-Film is quickly adjustable by the application of heat.

A 36" gas job was covered by us using only ¾ oz. of Type "C" Mirro-Film. The weights are Type "A", .19 oz. per sq. ft., "B" .15, "C" .12, "D" .10, each with much more than the necessary strength for its appropriate model.

The sheets are 24"x36" at 65c each postpaid.

Dealers write for discount and information

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1388 Carr Avenue Memphis, Tenn.

plate current of the audio tube, V3, and so operating the relay.

This tube is made to work somewhat similar to a grid leak detector, such operation being brought about by the condenser (C4) and resistor (R2) connected in the secondary circuit of T2. Removal of R2 and C4 cause V3 to function as an ordinary class A audio amplifier, and the receiver may then be used for control by means of selective A.F. relays.

This receiver is reasonably easy to get into operation, provided the parts are made and mounted as shown in figure 2. The tap on L1 may have to be varied for best results, and should be tried on different turns. The idea is to get the strongest possible oscillation which will produce the loudest hiss output. It is therefore advisable to put a pair of headphones across the primary of T2 while making adjustments. In any case, a milliammeter of low range, such as O-5 ma., should be placed in series with the plate lead of V3 and the circuit adjusted so that the current change is greatest when the transmitter is turned on and off.

An antenna for this receiver may consist of a four foot length of wire in series with a 3-30 mmf. midget trimmer and connected one or two turns away from the tap on L1. Adjustment of the condenser will enable the point for greatest plate current change to be arrived at. These adjustments should be made at some distance from the transmitter, preferably at least several hundred yards, as they are much too broad for careful tuning if the transmitter is too close.

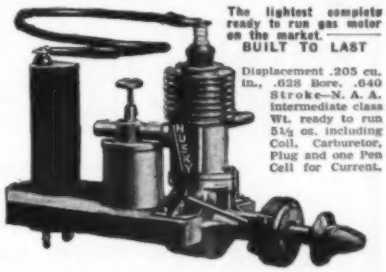
Alongside the receiver, in figure 2, is shown a new Burgess battery, the V30BP. This weighs only 5-1/2 oz., about half of that of the popular W30BP and similar types. The small size is naturally obtained at a sacrifice in useful life, and furthermore, the shelf-life is somewhat limited. However, it is thought that the V30BP offers a useful middle step between the Everready X180 and the 10 oz. class, particularly for those who require light weight with a better life than that afforded by the X180. The latter, of course, was designed for a class of service in which shelf-life is of no particular consequence, so its use in model work is practical only when every possible ounce must be saved.

Mention was made in Part One of the possibility of employing the sequence reverse relays used in model railroad trains for our control work. The writer has had occasion to examine one of these made by the A. C. Gilbert Co., and used in their HO gauge locomotive. This unit seems to be a "natural" for our purposes, since it operates very positively on 3 V. with a current drain of about 450 ma., and operating position has very little effect on it.

Best of all, the weight is only 2-1/2 oz. and even this might be cut a bit by judicious trimming of the frame. It is possible that the operating current might be cut even more by re-winding, although the above values were obtained with the original winding. Experimenters who are interested in the sequence type of control are advised to look into such units as this and possibly those designed by other manufacturers for similar purposes.

WE GUARANTEE OUR LATEST "HUSKY" TO BE

THE EASIEST STARTING MOTOR ON THE MARKET—NEW IDEAS—NEW METHODS—AND NEW UP TO THE MINUTE EQUIPMENT—MAKES OUR "HUSKY" BETTER THAN EVER—SATISFACTION GUARANTEED



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BUILT TO LAST

Displacement .205 cu. in., .628 Bore, .640 Stroke—N. A. A. intermediate class Wt. ready to run 5½ oz. including Coil, Carburetor, Plug and one Pen Cell for Current.

Dealers write for Special HUSKY Discounts

Husky motor mounts, wt. ⅝ oz., per pr., postpaid 50c
Husky Non Brittle prop. 11" or 12" each, postpaid 75c
Husky complete ready to run (less motor mounts, batteries and prop.) Postpaid $12.50

ORDER YOUR HUSKY TODAY! IMMEDIATE DELIVERY.

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DOUGLAS DESIGNED KITS the PREMIUM CHOICE of THOUSANDS EVERYWHERE

Douglas-Designed "Universal Speedster"

Span 36". Length 25". Wt. 2 oz. This new Douglas-Designed speed model has absolutely EVERYTHING you need. ALTITUDE — SPEED — ENDURANCE. perfect GLIDE and M & M Model Wheels for smooth landings.

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SENSATIONAL CONTEST MODEL

6 FOOT WINGSPAN for 1/6 to 1/4 h. p.

A remarkable ship designed exclusively for contests. Beauty combined with almost straight up performance makes it the most ideal kit on the market today. Recommended for anyone from beginner to expert. Contains such interesting features as, ready cut, ribs, bulkheads, firewall, motor mount, landing gear, amazingly clear plans, streamlined wheels, plenty of glue, dope, extra strips and sheet wood.

Complete Kit less motor—$5.50 p. p.

Plus any Brown Jr. motor 10% discount on Kit.

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BALSAWOOD SAWCUT SHEETS BLOCKS STICKS PROPELLERS

MANUFACTURERS—JOBBERS—DEALERS—CLUBS—SCHOOLS—EXPORT

SELLEY again has perfected an entirely new and fast method of cutting balsa, enabling us to produce in 1 hour what ordinarily would require 6 hours to do. Hence, this saving in labor cost is passed on to you at NEW SENSATIONALLY LOW PRICES.

And now, an unfailing, reliable source for the best selected grade of the MOST ACCURATE AND SMOOTH CUT sheets, sticks and saw cut propellers in any quantity at surprisingly NEW LOW PRICES.

METAL SPINNING Our SPINNING DEPARTMENT is the most complete in the country. We carry a full stock of Spun Aluminum Cowls, Drag Rings, Prop Spinners, from ¾" to 10" dia. We have been supplying the model trade with these specialties over 5 years. *Quantity prices furnished on request.*

SAW CUT PROPELLERS 4" to 18" Dia. Our BALSA Sawcut PROPELLERS are the best and most accurate and true pitched props available. We can now supply propellers in Medium and Hard Balsa in any size or quantity at short notice. *Quantity prices furnished on request.*

NEW!—Just off the PRESS—CONFIDENTIAL NET PRICE LIST

Every dealer will find this the MOST COMPLETE AND COMPREHENSIVE LIST ever compiled for the Model Industry, all Basic and Raw Materials, Special Wood Parts, Wheels, Die-Cast Airplane and Boat Items, Boxwood Parts, Dope, Rubber, Paper, in fact, hundreds of items that can now be supplied from one source at the LOWEST POSSIBLE PRICES.

GREATER NEW YORK AND LOCAL DEALERS We can supply you from stock at lowest prices Balsa, props, and all Model Airplane and Boat fittings and supplies. See our new low prices before placing your next stock order.

IMPORTANT —We will mail this list to legitimate dealers only. Use your letterhead. Postcards positively will not be acknowledged. Before placing your next order, write for our price list and see our prices before ordering.

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This little relay, incidentally, is far superior to the experimental job shown in figure 3, part No. 1, as it is lighter, less affected by position of operation and draws less current.

We have now covered the construction of two complete transmitters as well as several different types of receivers, and it is felt that sufficient types of each have been presented to meet every need. Unless some specific need arises later, we shall turn to other phases of control work in later articles.

Part III will describe a simple system of motor speed control that can be attached to practically any motor.

Figure 1. Parts for transmitter are: V1, V2, Raytheon type RK33; V3, 6V6; X tal, Bliley 10 meter crystals; Vibrapack, Mallory type VP552; M1, Triplett 50 ma. type 227 milliammeter; T1, U.T.C. type UPMG; T2, type UTG; CH1, type R19; C1, Hammarlund HF35; C2, HF50; C3, APC75, RFC, type CHX Radio frequency chokes, 2.5 mh.; C4, Solar 100 mmf. mica; C5, .005 mica; C6, 50 mmf.; C7, 8 mf., 450 V. Minicaps; C8, .05 paper; C9, 10 mf., 25 V. electrolytic; R1, I.R.C. 50,000 ohm type BT 1/2; R2, 2,000 ohm BT1; R3, 1,000 ohm BT1; R4, 10,000 ohm BT 1/2; R5, 1/2 megohm variable with attached switch SW1; R6, 400 ohms BT2. Sockets are Hammarlund type S; case Par-Metal type PC1576 with 2 type 15760 chasses. L1, 6 turns No. 14 bare copper, 1-1/8" long; L2, 8T same wire 2-1/8" long, all 3/4" diameter.

Figure 3. Parts for receiver: V1, V2, Hytron type HY113; V3, type HY125; relay, Sigma type 3A (or 2A) 8,000 ohms; tube sockets, Cinch 5 prong; T1, T2, U.T.C. type O-4; C1, C5, Hammarlund MEX trimmers, 3-30 mmf.; C2, Solar 100 mmf. mica; C3, .005 mica; C4, .001 mica; R1, I.R.C. 5 megohms type BT 1/2; R2, 2 megohms; RFC, 50 turn No. 28 enameled wire on 1/4" diameter bakelite rod; L1, 12T No. 14 bare copper, 3/4" OD, 1-1/4" long.

New Wings For Better Performance

(Continued from page 19)

(X-9) are given on page No. 30 of the September 1937 issue. The (X-9) section is shown on the small chart presented on the first page of this article.

The Grant (X) profile is suitable for heavy planes with small wing area or for use when slow flying speed is desired. In spite of its high camber it will provide a very high rate of climb if sufficient power is used.

The average gas model will give the best results when the (X-8) is used. This section has a high lift and an L/D ratio of about 24. A glider equipped with this

DeLuxe & Standard

MOTOR VALUE—DOLLAR VALUE

Special Model

1939 "O.K." MODELS

$11.80

AN EASY STARTER A CONSISTENT PERFORMER

Let us examine values—Our Special model "O.K." aircraft motor incorporates such features as one piece cylinder ground and lapped, hardened piston, hardened piston pin, connecting rod drop forged from steel and hardened, hardened crankshaft, one piece instantly removable gas tank held in place by spring loaded ball snap locks, a needle valve permitting fine adjustment, an air control slide, shake proof friction spring for needle valve and air control slide, a rugged and highly efficient ignition system which will operate for many hours without adjustment.

Do you know of any motor on the market having all the aforementioned engineering refinements that sells for less than $21.00 to $25.00, yet our Special motor sells for only $11.80. Truly the outstanding motor and dollar value of today.

Specifications

Bore, .900"; stroke, 31/32"; R.P.M., 10,000; H.P., 1/5 plus; Weight, bare, 7¾ oz.; Height, incl. plug, 4 11/16"; Displacement, .616-10 c.c. Factory tested and guaranteed.

Prices

Special,	$11.80
Standard,	17.80
DeLuxe,	21.00
Marine-D.,	22.50
Marine-S.,	13.20
Inverted, ext.	1.30

All motors complete with coil, condenser, etc., ready to run.

ORDER THROUGH YOUR DEALER, IF NOT CARRIED BY YOUR DEALER ORDER DIRECT FROM

HERKIMER TOOL & MODEL WORKS (Dept. A) Herkimer, N.Y.

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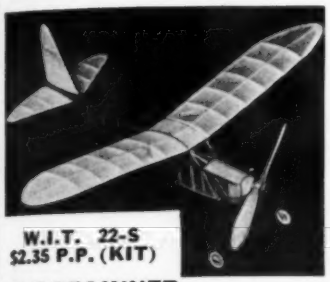
MORE FLYING TIME . . .

PRE-FABRICATED . . . DESIGNED BY EXPERTS QUICK TO BUILD . . . SURE TO FLY



W.I.T. 22-S
$2.35 P.P. (KIT)

THE BEGINNER

Examine our kit. Note that parts are scientifically pre-fabricated. This simplifies construction, reduces your chance of failure, gets you into the air faster.

W.I.T. 32-S Same as above but 32" span.....$2.95 P.P.

CONTEST MODELS (Kits)
W.I.T. 18-J (18" span).....$1.50 P.P.
W.I.T. 30-J (30" span).....$1.95 P.P.

Don't waste money on inferior kits. Before you buy, show this to your Dad:

Failure with his first model may create an inferiority complex that could affect your son's whole life. Let his first kit be a W.I.T. and he will produce a model to be proud of. We planned it that way.

REALLY PRE-FABRICATED

Kits complete with finished propeller, covering tissue, built up wings, tail surfaces and fuselage sides, and formed wire parts. Note fuselage jig which insures perfect alignment and ease of construction. Engine, propeller not included in gas models, wheels $1.50 extra.

Patent Pending

WIT-KIT

All engineering and design under direction of B. Russell (Russ) Shaw, Early Bird, and former Chief Designer for Wright brothers.

AIRPLANE DIVISION
WASHINGTON INSTITUTE OF TECHNOLOGY
McLACHLEN BUILDING WASHINGTON, D. C.

W.I.T. 48-G
$3.95 P.P.
(KIT)

THE "OLD TIMER"

Sure, you're an old timer. Built lots of models, good ones too. Skilled. Like to do all your own work. But why spend all your time cutting out the same old parts?

Get out of the basement. Fly! Build a better model in ONE-TENTH the time and fly it longer. Examine our scientifically pre-fabricated kit.

Remember, this kit doesn't baby you along. It does, however, get you into the air quicker with a swell model.

The WIT-TRIAX is a six-foot power model that will knock your eye out. Write for description and price.

DEALERS: Send for prices and merchandising plan.

DESIGNERS OF THE AIR-TRACK RADIO LANDING SYSTEM AND OTHER INTERNATIONALLY KNOWN RADIO AND FLYING AIDS

profile gave an average glide of 20 to 1 when flown in Germany during a series of test flights.

The (X-9) is an excellent section to use on planes of which a fast high rate of climb is desired and when the wing loading is 10 oz. per square foot or less.

The (X-10) is most suitable for use on biplanes of light wing loading. The flight speed of this section is about the same as that of the Clark Y. It may be used also on fast climbing, fast gliding monoplanes.

The sections (X-12) (X-14) and (X-16) are primarily speed sections; the flight speed being inversely proportional to their camber factors, or their maximum camber heights. The (X-16) is primarily a high speed section and would be unsuitable for use on the *average* gas or rubber model.

The (X-12) would give good results when applied to lightly loaded biplanes.

The flight efficiency and duration of your model will depend largely on your selection of a wing section, so study the characteristics of each one carefully before you make your final choice.

(For camber factors not shown here, see page No. 17, November 1938 issue.)

N.A.A. News

(Continued from page 27)

Wakefield International Contest

Thirty-eight foreign countries where the Federation Aeronautique Internationale has representatives, have been invited to send teams to the Wakefield International Contest which this year will be held early in August in New York City. The contest will be conducted by the Greater New York Chapter of the N.A.A. in conjunction with the New York World's Fair.

Besides participation awards for every contestant, $250 in cash will be awarded the team winning the Wakefield trophy.

Several countries, among them, Holland, Italy, England and Canada, have already declared their intent to participate. All nations are invited to send a full team of six if possible. If not, one or two fliers may attend and fly the six models permitted to represent each country. Those nations who cannot send representatives may ship their winning model to be flown by proxy.

Foreign nations are asked to contact Irwin Polk, Wakefield International Contest Director, at 429 Seventh Avenue, New York City, for full particulars.

National Contest

Plans are nearing completion for the Twelth National Championship Model Airplane Meet which will be held under the direction of the Detroit Metropolitan Council of Exchange Clubs, July 5th to the 9th. Some 28 Exchange clubs in the greater Detroit area are acting as sponsors of this year's National Meet.

The events will be practically the same as those of last year. There will be an Indoor Stick contest for Class A to D models, an Indoor Cabin contest for Class A to D models, the Admiral Moffet International Contest for Cabin Models of 100 to 200 square inches and Wakefield International Competition Eliminations to determine the American team of six. There will be an Outdoor Flying Scale model contest for scale models not over 200 square inches of

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The NEW DAISY LIGHTNING-LOADER Carbine
5 SECONDS TO POUR A FULL TUBE OF SHOT
Write for Free
DAISY AIR RIFLE CATALOG
Ready!—new Daisy Lightning-Loader CARBINE . . . fastest, easiest loading air rifle ever! New Features: Lightning-Loader 500 Shot Magazine, ADJUSTABLE DOUBLE-NOTCH Rear Sight, Pistol Grip stock. $2.50 at Dealers. If he hasn't it, send us $2.50, We'll mail yours postpaid!
DAISY MFG. CO. 196 Union St. Plymouth, Mich., U.S.A.
2.50
Higher in Canada
Get a DAISY AIR RIFLE

CHICAGO'S Foremost Model Shop Offers a Complete 1939 GAS LINE

GAS MOTORS (in stock)

Syncro Bee	$12.50
Syncro Special	9.95
Syncro Ace	13.75
Denny Unit	13.85
Denny Standard	15.85
Denny Deluxe	17.85
Mighty Midget Kit	7.85
Mighty Midget	9.50
Gwin Kit	9.95
Gwin	12.00
Forster	17.75
Forster Ball Bear.	19.50
Hi-Speed	12.75
Herkimer Special	11.80
Herkimer Deluxe	21.00

GAS KITS

MEGOW'S

The Commander	$4.95
The Cadet	3.95
Flying Quaker	5.95
Quaker Flash	4.95
Piper Cub	3.95
Cardinal	3.95

COMET

Clipper	4.95
Curtiss Robin	5.95
Golden Eagle	2.75

BERKELEY

Buccaneer Stan.	5.00
Cavalier Stan.	5.95
Buccaneer "48"	2.95

SCIENTIFIC

Miss America	7.50
Commodore	6.95
Red Zephyr	4.95
The Streamliner	4.95
The Eaglet	3.95

Also All Cleveland, Ideal, Peerless and Aircraft Kits.

Midwestern Gas Model Headquarters

TROST Model Airplane Shop
3111 West 63rd S treet • CHICAGO

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MODEL AIRPLANES—KITS—SUPPLIES

BALSA WOOD Planks—Dealers, Clubs, Manufacturers! Buy Balsa Planks direct from the importer at tremendous savings. Write immediately. State quantities interested in. American Enterprises, 5118B-13 Ave., Brooklyn, N. Y.

DEALERS, Clubs, Schools: Send for low, complete wholesale list, including gas model supplies. Save money. Model Airplane Utility, 5307 New Utrecht Ave., Brooklyn, N.Y.

KOPNEK'S for rubber and gas model supplies and kits. Also to trade in your old motors and be up to date. Send now for Free price list. Kopnek Model Supply, 363 East 71st St., New York City.

20" STINSON—30" Douglas—26" Puss Moth—32" Outdoor Contest Model—24" Endurance, Beautifully Designed Fliers, 10c each plan. 3 for 25c postpaid. H. J. Arons, 463 6th Ave., Brooklyn, N. Y.

FREE—Money saving list of latest solid and stock models. Stamp brings list. John Sanchez, 112 Franklin St., Stoneham, Mass.

SOUTHERN dealers, modelers, New York prices. Comet and Megow's kits, supplies, wood, rubber, etc. Our location saves several days on delivery. We guarantee to please. Model Aircraft Co., 416-20th St., Huntington, West Virginia.

CANADIAN Gas Motors, ⅛ h.p., 6¾ oz., original features, made in Canada. Dealers write. Drimmie, 193 Gainsboro Rd., Toronto, Canada.

SPECIAL! The Grey Goose. Convertible High or Low wing. Real performer! All Balsa. Parts Shaped. 75c value, only 50c p.p. Elliot Aircraft, Lake Drive, East St. Louis, Ill.

FREE—Get your copy of the 1939 GMS Super-Catalogue To-Day. "Everything for Gas Models." Central New Yorkers: Visit our new headquarters in the heart of Syracuse. Gas Model Specialties, 128 W. Washington, Syracuse, N.Y.

FLIP STIX Gas Propellers, lengths 9" to 18", balanced and lacquered 2c an inch, laminated 3c an inch. Example 13"—26c, laminated 39c. Single and three bladed props very reasonable. List sent free. Model Shop, 1929 Broadway, Denver, Colorado.

DEALERS and Jobbers: Write for discount price list on washers, thrust berainge, and propeller shafts. Kaywalt Manufacturing Co., 2702 Dwight Ave., Dayton, Ohio.

RADIO CONTROL—Send stamp for circular C-1 showing latest equipment. Lightweight, reliable, guaranteed to perform. Radio Control headquarters, Granby, Conn.

METEOR Gas Motor $8.75. Compressed Air Motor $2.75. Balsa Stripper 50c postpaid. R. Hetherington, 4526 Cortliss Street, Los Angeles, Calif.

ALUMINUM: In all commercial forms, sheets, angles, bars, rods, foil, mouldings. Immediate Delivery. Empire Aluminum Co., Station D, Box 97, New York.

ATTENTION dealers, clubs schools. Hold your next order until you've seen our wholesale price list of model airplane supplies, rubber and gas powered. Don't Wait—write for it now. Cole Model Supply Co., Dept. S, 30 Coles Street, Brooklyn, N. Y.

DEALERS—send for special catalog. Supplies, kits motors at Lowest Prices. Diamond, 260-(M-6) Troy, Brooklyn, N. Y.

CATALOG of 1¼" scale models, including drawings. 10 cents; refunded on first order. Superior Model Company, Box 1994, Tulsa, Oklahoma.

WIN more gas contests. Use special fuel not gasoline. Gives any motor more horsepower. Formula 25c. Scale Model Shop, Battle Creek, Mich.

5' MISTER MULLIGAN with aluminum cowl $1.00 p.p. Dealers, Clubs, Schools write for special discounts today and save. H & F Model Airplane Co., 459 Bristol St., Box 48, Brooklyn, N. Y.

DEALERS, Jobbers—Real profits on rubber and gas supplies. Stamp brings wholesale list. Modelers write for retail list. Waterbury Model Builders Supply, 131 Cherry St., Waterbury, Conn.

MISCELLANEOUS

USED Aeronautical Books bought, sold, traded. Large stock of popular, technical and historical books. Write, S.S. Balsam, Dept. 4, 2121 Foster Ave., Brooklyn, N. Y.

CAMERA FANS—Attention! Make money with your kodak. Sell your Snapshots to Publishers. Thousands of Dollars are paid to amateur photographers yearly. Send 35c in silver for copy of "The Hundred Best Markets for your Photographs." Also contains secrets of camera journalism. Starcrest, Dept. 1, 1627 Foley St., Alameda, Calif.

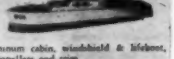
600 PAGE Catalog, 6,000 novelties, puzzles, tricks, airplane and hobby kits, knives, guns, radio kits, cameras, etc. 2c. Johnson Smith, Dept. 333, Detroit, Mich.

HERE is something new for you fellas who build flying model airplanes.

SCALE MODEL SUBMARINE S-50

19" lg. with adjustable fins, water ballast chamber and air valve control for diving. Runs on surface or under water. Die cast conning tower, naval gun and keel parts. Brass propeller and trim. S-50 Submarine Kit (54 completely machined parts ready to assemble) ..... $2.50 P.P.
13 inch model completely assembled ..... $3.50 P.P.
13 inch model kit (40 parts) ..... $1.00 P.P.

SCALE MODEL SUB CHASER CP-375



30" lg. 1¼" beam with heavy duty spring motor driving twin screws thru 4 midget gear set. Kit includes completely machined hull, mechanical drive parts, stamped aluminum cabin, windshield & lifeboat, die cast naval gun and ventilators. Brass propellers and trim. Ready to assemble. $2.75 P.P. Completely assembled in Navy Colors. $3.95 P.P.

Send for FREE catalog of other models
WESTLAKE MODEL CO., Dept. M-69, ERIE, PA.

wing area. At the present time, the National Contest Board has not definitely decided to schedule an outdoor Stick Model contest and another Outdoor Cabin model event (Stout). These two events have been held in the past National meets. The power model contest will consist of the four events for the new power model categories established by the Academy.

Detailed rules will be announced in this magazine in the forthcoming issue.

Model Industry Cooperation

Irwin Polk, Meet Manager of this year's National Meet, has requested the cooperation and support of the model industry in making this year's National Meet a greater success than any previous one. The National Contest is the most important activity in model aviation. All manufacturers and everyone in the industry are urged to lend their support by cash, merchandise, or trophy donations. The Exchange Clubs of Detroit are bearing the full burden and financial responsibility of the technical conduct of the Meet.

Club Trophy

The Fred W. Megow trophy and plaque will again be presented to the club which accumulates the greatest number of points in the National Meet. The Akron N.A.A. Chapter won the Megow club trophy last year.

Point System

1. Indoor stick model event.
2. Indoor cabin model event.
3. Outdoor flying scale model event.

The following points will apply:

	1st	2nd	3rd	4th	5th	6th	7th
Radius of 100 miles	16	5	4	2	2	1	1
Radius of 200 miles	17	6	5	3	2	1	1
Radius of 400 miles	18	7	5	4	3	2	1
Radius of 700 miles	19	8	6	5	4	3	2
Greater than 700	20	8	7	6	5	4	3

4. Gas Powered model event. Class A, B, C, or Open.
5. Radio controlled model event.
6. Moffett International Cabin Model event.
7. Wakefield International Contest Eliminations.

	1st	2nd	3rd	4th	5th	6th	7th
Radius of 100 miles	22	7	2	2	2	1	1
Radius of 200 miles	24	9	4	3	3	2	2
Radius of 400 miles	26	11	6	4	4	3	2
Radius of 700 miles	28	13	8	6	5	4	3
Greater than 700	30	15	10	8	6	5	4

Academy of Model Aeronautics

The following individuals have been recommended for the position of State Director or Associate State Director in the various states:

New York.....Harry Copeland, Syracuse
Pennsylvania .....Bob Allen, Pittsburgh
Ohio .....H. M. Jellison, Akron
Missouri.....Bob Sommers, St. Louis
Illinois .....Frank Nikimken, Chicago
California .....Barney Snyder, Los Angeles
Michigan .....Arthur Vhay, Detroit
Massachusetts.....Albert Lewis, Boston
Louisiana .....Roccos Glorioso, New Iberia
North Carolina .....Allan Boonton
Maryland .....John G. Lacey
Indiana .....Bert Pond, Robert Roberts
Virginia .....Philip W. Pepoon
Connecticut .....Alfred Schmidt
Georgia .....Cappage
Florida.....Bob Carr, Timpone, Jacksonville

Ye Rubber Fiends!

• The season of wind-ups is with us again. And that ageless riddle "Should I stop winding now?" will pucker brows around the world.

• Contrary to opinions expressed in the good olde days of ¼ oz. per lb. fuel allowance, the rubber powered models are still here, stronger than ever. The increased wing loading proved to be quite a revelation to all of us. Smart boys added more rubber to meet the weight rule with the result that models had spectacular climb which provided more opportunity for thermal hunting. Of course power brought up problems. Aerodynamically, increased dihedral, prop offsets and correct rudder area did the trick. While beefing up vital structural parts kept the model in shape.

• We have also found that a well tested model has best chance of winning. This calls for extraordinarily strong construction with minimum weight to keep high Power/Weight ratio. Here is where JASCO comes in with its foresighted method of COLOR CODED and GRAIN CUT Balsa. It enables you to follow regular aircraft practice: Strength where needed, and lightness for streamlining and shaping. You may be assured of getting what you want because every piece of JASCO BALSA has its end colored according to the Color-Weight chart.

• Through years of personal experiments we have found that tough longerons, or monocoque construction of light stock will keep the fuselage intact. While high and thin wing spars cut from 11-14 lb. stock with "C" grained and light ribs (7-10 lbs.) and 1/32 Leading edge covering and rib capping will produce an almost unbreakable wing. Try this combination on your next design.

JASCO RUBBER MODEL SPECIALS

• **JASCO BALL BEARING WASHERS:** The accepted standard equipment around the world. Winning designs and record holders have them with almost no exceptions. Our initial die and tooling costs have been covered and we are very glad to announce a 50% reduction in price! You can now buy the 7/16 dia. size for only 5 Cents!

7/16 dia. BB Washer. Fits 1/16 dia. wire, Will handle any amount of rubber you can wind. New Price.....5 Cents

New Tiny 5/16 BB Washer. Fits .040 wire and can safely handle 24 strands of 1/8. Price.....10c Each

JASCO BROWN RUBBER

• Identical to Brown Rubber used on all record and winning models. We prefixed it with JASCO so that you may be assured of its freshness and reliability. You might not know it, but production price of Brown Rubber has increased 30% but we still keep the original retailing price, 1/30 thick. Skein equals 225 feet.

1/8th	10 ft. for 5c	60c per skein
3/16th	15 ft. for 10c	90c per skein
1/4 width	10 ft. for 10c	$1.10 per skein

• **JASCO CONCENTRATED RUBBER LUBRICANT.** The finest formulae money can buy. Used by those who know and appreciate good lubricant. You can be assured of extra high slippativity because JASCO LUBRICANT is compounded from chemically pure ingredients and thoroughly mixed with power mixer.

2 oz. can with spout—25c 1 oz. bottle—15c

Mail instructions: BB washers Postpaid. Add 15c to rubber and lubricant orders. PROMPT SERVICE assured.

• Why not use JASCO CATALOGUE? It is mighty advantageous in contest work to use JASCO supplies, and it is economical too as you may expect only the best. Our reputation is built on quality. Just ask our trash man. If you are still without our 1938 Catalogue and Handbook, send a postal for a free copy today.

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AIRPLANE STRENGTH ANALYSIS

You can now enjoy training from courses prepared by outstanding engineers employed by major factories in train limited groups inside the industry. Basic Drafting and Design also available. Mathematics taught by our simplified design application method. Mail this ad today for free booklet, "Specialized Application Brings Greater Success."

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Also complete line of Marine and Railroad Models

MORE POWER TO YOU!

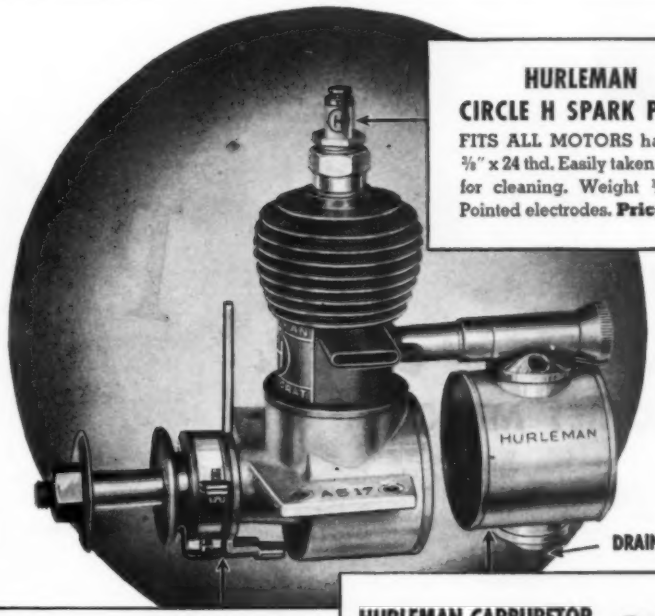
The New

HURLEMAN ARISTOCRAT MOTOR

The Hurleman Aristocrat Motor is definitely a custom job, with *plus*-performance built into every single part. Standard equipment includes Hurleman Circle H two-piece spark plug with pointed electrodes; special Hurleman timer that provides perfect ignition at top speeds with adjustable tungsten breaker points; new style carburetor with metal tank; Circle H ignition coil with special mounting clip; and condenser. PRICE: complete and ready to run, $21.50, F.O.B. Phila.

Write for descriptive literature. Please enclose stamp.

ATTENTION DEALERS! Discounts assure you extra profits on Hurleman products. Write for details.



HURLEMAN CIRCLE H SPARK PLUG
FITS ALL MOTORS having ⅞" x 24 thd. Easily taken apart for cleaning. Weight ¼ oz. Pointed electrodes. **Price 75c**

HURLEMAN IGNITION TIMER
FITS ALL BROWN MOTORS. Can be adapted to any make motor. Replace defective or inefficient timers with Hurleman timer for peak performance. Adjustable tungsten breaker points. . . . . **Price $2.50**

HURLEMAN CARBURETOR
FITS ALL MOTORS. Both metal and glass types are easily taken apart for cleaning. When ordering specify O. D. of intake manifold.
Glass tank ¼ oz. **Price $2.50**
Metal tank ¾ oz. **Price $3.00**

HURLEMAN DISTRIBUTING CO.
1438 W. Hunting Park Ave., Philadelphia, Pa.

Wisconsin..Conrad Hansen, Jr., Beloit, Wis.
Arkansas....H. A. Thomas, John Worthen, Little Rock
Nevada .....Wm. R. Woodard, Reno

These men must be experienced in the model aeronautic activity as leaders and contest directors and must be members of the Academy of Model Aeronautics before they can be appointed. It is hoped that the model builders in each state will assist the Academy president in making appointments, by voting in favor of the suggested individuals or by suggesting others who are fitted for this position. In the larger states where activity warrants it, two directors will be appointed. Model builders in each state are asked to write to the Secretary of the Academy of Model Aeronautics, at 429 Seventh Avenue, New York City, either approving the nominee in their state or recommending another individual who in their opinion might be suited for the work. There are no nominations from many states. Builders in these states are particularly asked to send in their suggestions without delay.

Edward Roberts, president of the Academy of Model Aeronautics, has announced the appointment of the following committees:

National Conference: Albert Lewis, Chairman, with Academy officers making up the rest of the committee. **National Contest:** H. M. Jellison, Arthur Vhay, Harry Copeland, Bob Sommers, Frank Nekimken, Wm. Berry, Nathan Polk. **International Coordination:** Gordon Light, Frank Zaic. **Radio Control Model Committee:** Clinton De Sotto, Joe Raspanti, Bruno Marchi, Pat Sweeney, Philip W. Pepoon. **Publications Committee:** William Enyart, Chairman, Charles Grant, Paul Lindberg, Philip Zecchitella, C. B. Colby, David C. Cooke. **Rubber Model Committee:** W. Tyler, Carl Goldberg, Louis Garami, Gordon Light, Hewitt Philips, Joe Kovel, Henry Struck, James Kahill, Henry Stiglemeyer, Roy Wriston, Frank Zaic. **Scale Model Committee:** Roger Hammer, Bob Crawford, Victor Fritz, H. M. Jellison, Percy Pierce, Henry Struck, Allan Boonton, Nelson V. Johnson. **Membership Committee:** Shall consist of the officers of the Academy and the State Directors in each state. When appointments become final, all applications for membership of the Academy will be cleared first through the State Directors who will aid in carrying on the work of the Academy of Model Aeronautics in each state.

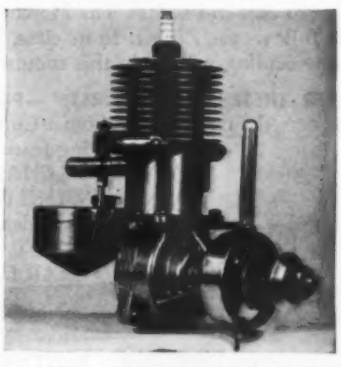
West Coast

As approved by the Academy of Model Aeronautics, the Academy president hereby requests that the NAA groups on the West Coast elect a vice-president who will serve as the Academy official in their territory. The matter of nominations and elections is left entirely up to the club's concern. The individual elected should be thoroughly experienced in model work and have the respect of the model builders in his area. Executive ability and a little free time to devote to Academy work would help a lot.

Prepare now for the Nationals
July 6th-9th

THE NEW
MERCURY
GAS MODEL BY SCIENTIFIC
See Page 39

the *1939*
FORSTER



is the MOST MODERN motor! Built like today's large airplane motors! High turbulence Compression Chamber. Ball bearing Thrust AND Main Bearing. "Oilite" connecting rod bearings. Low head gas tank. Enclosed auto type Timer. Two cast iron Piston Rings. Lo-ex alloy Piston.

For easy starting, for power developed and long life, it has no equal! It is the ideal motor under today's N.A.A. rules. We offer you the highest quality in miniature motors,—ask the owners,—look at past performances! Write today for our new folder, just off the press!

FORSTER BROTHERS
519 Lake Street Maywood, Illinois

COMET and Carl Goldberg present 2 NEW

CARL GOLDBERG, *gas model wizard, whose designing genius made these two new Comet models possible.*

Specifications and Contents of the COMET MERCURY KIT

Wingspan ..... 42"	Wing Loading..9 oz. per sq. ft.
Overall Length ..... 31"	Wing Airfoil.....Goldberg G5
Wing Area..2sq.ft.(288sq.in.)	Power Plant
Total Weight (with motor) ..... 18 oz.	.....Any 1/7 or 1/8 h.p.
	Climb .....1800 ft. per min.

FINISHED RITZ PROPELLER—aerodynamically efficient. FINISHED ALUMINUM MOTOR MOUNTS—fit all motors. READY FINISHED PLYWOOD FIREWALL and front ring. WING AND ELEVATOR RIBS accurately cut. LEADING AND TRAILING EDGES already shaped. STREAMLINED BALSA WHEELS—airwheels may be used if desired. READY-FORMED LANDING GEAR. COMPLETELY FINISHED MOTOR LOCK FITTINGS. Plenty of COLORED BAMBOO PAPER, CEMENT and DOPE. All Necessary Hardware. Full Size Plans.

A folder, "How to Adjust and Fly Gas Models" by Carl Goldberg, free with each kit.

Get It From Your DEALER

$2.95

KIT No. T11

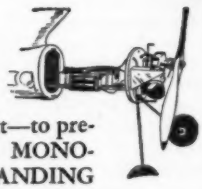
Postage 25c; none if ordered from dealer.

ESPECIALLY DESIGNED FOR THE SMALL MOTOR —*Its* CLIMB *and* GLIDE *Amazed Even Experts!*

Make way for the Comet Mercury! Here is a simplified sister-ship to the Comet Zipper, especially designed to give superb performance on any of the small motors! We warn you that the Mercury will force you to revise your opinions on small model performance. Experts hardly believed their eyes when they saw its astounding climb and sensational glide—but when the Mercury performed in the same sensational manner time after time, they agreed it was by far the greatest development to date in its class. The Mercury, in basic design, features and engineering, closely follows the Zipper. In its class, it is equally outstanding, and is destined to be the outstanding winner in this summer's small model contests.

REMEMBER THESE COMET "FIRSTS"—PRESENTED IN THE COMET CLIPPER?

Over a year ago, the now famous Comet Clipper commercially pioneered the following features, now widely adopted by others: DETACHABLE MOTOR UNIT and battery track. WING DETACHES from fuselage in heavy impact—to prevent damage. DOUBLE ELLIPTICAL WING. MONO-STRUT, READY-FORMED, MUSIC WIRE LANDING GEAR fastened to plywood fire wall.



Detailed sketch showing detachable motor unit.

An action shot of Carl Goldberg making one of the hundreds of test flights during the development of the Zipper.

Now, in the new Zipper and Mercury, Comet presents more new and sensational developments: NEW FUSELAGE CONSTRUCTION employing double-monocoque principle. FLEXIBLY FASTENED IGNITION TRACK. Efficient electrical APARTMENT-HOUSE ARRANGEMENT of ignition parts. "Automatic Pilot" streamlined wing mount and polyhedral wing. Instant-Operating Motor Unit Spring Locks never require replacement. Positively Keyed Wing and Tail—assures perfect alignment on every flight. Correctly designed, formed aluminum motor mounts that fit all engines

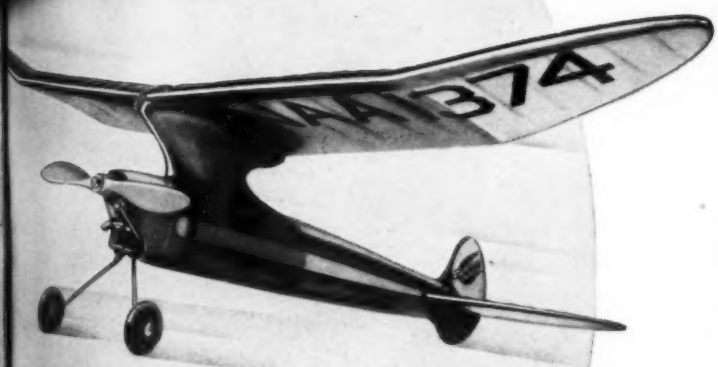
THE ZIPPER'S IMPRESSIVE CONTEST RECORD— 9 FIRSTS IN ELEVEN MEETS

Place	*Contest*	*Builder*
1st	Midwestern States	Richard Obarski
1st	Mississippi Valley	Carl Goldberg
2nd	Am. Legion Nationals	Carl Goldberg
2nd	Jr. Aviator Nationals	Carl Goldberg
1st	Buzzard Gas Contest	Alvin Anderson
1st	Rockford Gas Bugs	Alvin Anderson

Place	*Contest*	*Builder*
1st	"Chicago Times"	Alvin Anderson
2nd	"Chicago Times"	Bernard McShane
1st	Chi. Model Assn.	Bernard McShane
1st	Lane Prep	Bernard McShane
1st	Penguin Club	Bernard McShane
1st	Chi. Model Assn.	Alvin Anderson

...AS MODELS *which create* NEW STANDARDS *of*

...MANCE



...URY *The* COMET ZIPPER

COMET

Specifications and Contents of the COMET ZIPPER KIT

Wingspan ..... 54"	Wing Loading ..... 8.7 oz. per sq. ft.
Overall Length ..... 34½"	Wing Airfoil Goldberg G5
Wing Area ..... 3.44 sq. ft. (495 sq. in.)	Power Plant ..... Any 1/5 or 1/6 h.p.
Total Weight (with motor) ..... 30 oz.	Climb ..... 2000 ft. per min.

FINISHED GENUINE "RITZ" PROPELLER—not just a roughed-out blank—but a proven, aerodynamically efficient finished propeller. FINISHED ALUMINUM MOTOR MOUNTS—fit all motors. A great improvement over old-fashioned wood mounts—come ready to mount in model. READY FINISHED PLYWOOD FIREWALL and front ring. WING AND ELEVATOR RIBS accurately cut with master dies. WING AND ELEVATOR SPARS furnished tapered for maximum efficiency. STREAMLINED BALSA WHEELS—lightweight for greatest efficiency. (Airwheels may be used if desired.) READY-FORMED LANDING GEAR. COMPLETELY FINISHED MOTOR LOCK FITTINGS hold motor unit securely to fuselage—never need replacement (a new Comet development). Plenty of COLORED BAMBOO PAPER. More than enough CEMENT AND DOPE to finish model completely. ALL NECESSARY HARDWARE—best wire fittings, machine screws, nuts, washers, lock washers, battery clips, etc. FULL SIZE PLANS clearly show construction of all details. Nothing left to be worked out.

A folder, "How to Adjust and Fly Gas Models" by Carl Goldberg, free with each kit.

***Get It From Your* DEALER**

$3.95

KIT No. T10

Postage 25c; none if ordered from dealer.

ALVIN ANDERSON, *well-known model builder who was associated with Carl Goldberg in the design of the Comet Zipper.*

"STANDS RIGHT UP ON ITS TAIL *and* C-L-I-M-B-S *—until it's just a dot in the sky!"*

PERFORMANCE—that's what Comet, in collaboration with Carl Goldberg and his associates, give you in the Comet ZIPPER! Performance that's 'way ahead of anything you ever dreamed of—performance that will amaze and thrill you! With this revolutionary new model, Comet steals a march on the entire field!

We *know* what the Zipper will do—already it has taken 9 firsts in 11 meets! The Zipper was *deliberately designed* to win contests. The climb will absolutely shock you—it stands right up on its tail—climbs until it's just a dot in the sky—all in the 20 seconds motor run allotted by the new N.A.A. rules. You'll stand awe-struck as the ship curls out of its steep climb into a slow, steady, floating glide.

Carl Goldberg conceived the basic design of the Zipper over a year ago, but it took a year of constant testing and hundreds of flights with 10 experimental models before he gave it his final approval. Time and again, the ship was re-designed to eliminate weak points. As a result, the Zipper is a marvel of aerodynamic perfection in design, and so rugged that you can forget about crack-ups.

A few outstanding points: Hundreds of tests prove that the Zipper performs equally well with motor in upright or inverted position—plans clearly show both methods of mounting. This "zippy" little demon has won contests in winds even as high as 35 m.p.h., as well as in dead calm. Its floating glide lets the Zipper "hang up there" and catch thermals.

Scientifically stressed, streamlined, double-monocoque fuselage employs new stronger construction, yet cuts building time. It houses a simple battery and ignition track, *flexibly* fastened to instantly detachable firewall and motor unit; quick, convenient access to entire ignition system—a Comet first! New, compact apartment-house arrangement of ignition parts increases electrical efficiency, producing hot, positive spark. Batteries instantly replaceable—no fussing. "Automatic pilot" streamlined wing mount and polyhedral wing insure stability necessary for controlled super-performance. Double-elliptical wing has special new Goldberg gas model airfoil section permitting maximum climb and a sailplane glide. Wing spars large and strong enough to stand even repeated looping.

COMET MODEL AIRPLANE & SUPPLY COMPANY

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COMET maintains distributors in many cities throughout the United States and other parts of the world. Foreign distributors include: F. P. Sweeten, Blackpool, England; E. J. Hyams and Son, Wellington, C. I., New Zealand; PACIFIC COAST DISTRIBUTORS: Edw. Kapitanoff, 4649 Prospect Ave., Los Angeles, Calif.; Smalley Paint and Paper Co., 5300 Ballard Ave., Seattle, Wash. Exclusive Distributor Detroit Area: Airco Model Supply, 13329 Charlevoix Ave., Detroit, Mich.

OHLSSON 23

the Engine Used by EXPERT MODEL BUILDERS

and those who want to be!

Seeing an Ohlsson "23" for the first time, one fan remarked:

"It makes you want to build better models!"

It does! Ohlsson "23"—a real Ohlsson motor—was intended to inspire experts to do their best designing in the small model field. And fire you beginners who are just graduating into gas model flying to get down to work!

Here's more **POWER** than you'll need to win meets, more than in any small engine up to and including miniatures of .30 cu. in. displacement! Absolute starting. Accurate speed control. A motor that repays every hour you spend in planning and building a perfect ship!

Ask your dealer for demonstration and write direct for full factory literature and specifications. Power your next ship with the Ohlsson "23"—the motor that continues to run past the 400 hour mark. At your dealer, $16.50.

speaking of records:

1. Eastern State Championship—Quaker City—Won by Ohlsson "23".

2. Midwest Championship—Minnesota—Won by Ohlsson "23".

3. Pacific Coast Championship—First and Second. Also against a field of over 300. The models taking First, Second and Third places at Pomona, Calif., *were powered by Ohlsson "23's".*

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